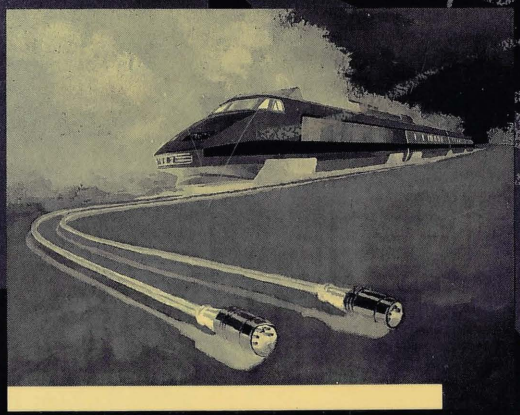

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Hybrid Arts, Inc.™

317453

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About The Program

Version:	5.09		
Program Author:	Stefan Daystrom	User Manual:	Bryan Celano
SMPTEmate:	Joe Fitzpatrick		Steve Cunningham
SysXpress Accessory:	Tom Bajoras		Chris Many

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SmpteTrack II	SMPTE synchronization - The external hardware that comes with this software allows you to synchronize any type of audio (or video) recorder to your computer. 60 Tracks / SMPTE Synchronization as well as Tape Synchronization / Full Graphic & Text Editing
EditTrack II	A non-tape user's dream! This package is everything SmpteTrack II is with the exception of tape sync ability. Those tapeless studios are growing so fast, we had to make sure those musicians were given the most powerful sequencer available -- without having to pay for the extras! 60 Tracks / Full Graphic & Text Editing
EZ-Track Plus	20 Tracks / Perfect Introductory Educational System

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Second Printing

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4. Please have your software serial number ready.
5. Did the software work properly at any time prior to your problem? If the program worked properly, have you changed anything in the computer environment?
6. Can you recreate the exact sequence of steps that demonstrates or reproduces the problem?
7. Have any error messages appeared before, during or after the problem occurred? If so, what were they?

Please Write To:

Hybrid Arts, Incorporated
Product Support Division
8522 National Blvd.
Culver City, CA 90232

Hybrid Arts Product Support Talk Lines (USA): (213) 841-0340
Calling hours: Monday-Wednesday-Friday 12:00 - 4:00 PM PST

Additional Support

There is also a Hybrid Arts Bulletin Board Service. This is a service available via modem (2400/1200/300 baud). Leave questions about specific products or general questions regarding MIDI. Our Support Specialists' answers are quick and direct.

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For Literature, Write To:

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This Appendix is included with the HybriSwitch Program. HybriSwitch owners can easily insert Appendix H in the Appendix Section of this manual or in the manual of any Hybrid Arts program compatible with HybriSwitch (format allowing).

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This Appendix is included as a manual for the MIDIPLEXER hardware. Those who own a MIDIPLEXER can easily insert those pages at this point in the Appendix Section of this manual.

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CHAPTER 1
INTRODUCTION

In This Chapter:

- MidiTrack ST "The Program"
- About This Manual
- System Requirements

MIDITRACK ST "THE PROGRAM"

MidiTrack ST is a 60-track sequencer that provides any musician with the most flexible and powerful music production system available for the Atari personal computer system. This overview is simply intended to give you an idea of what's in store for you as you learn to use MidiTrack ST. Because it is a powerful package, it means there is a lot to learn. Fortunately, the interface built into the program is very easy to operate, giving you a variety of ways to tell the computer just what you want it to do for you. To get the most out of this program, you should invest some time in learning how to use it. The rewards of learning the power of this package will become more evident each time you sit down to record some music, and as the commands become second nature to you, the speed with which you produce will impress you.

MidiTrack ST is laid out like a multi-track tape recorder; linear sequencing, in other words. Each track functions quite like what you'd find in a 24- or 32-track machine, except now you have 60 digital tracks. You can record music in much the same way: keyboards on one track, bass on another, kick on a third, etc., overdubbing as you go. Tracks can be muted, bounced, or just about anything you'd normally do with an analog tape deck.

Bear in mind a basic understanding of MIDI and the instruments you own: each key or button of your instrument (drum machines included) is like a light switch. Those switches are used to turn notes ON and OFF, no matter what sound is set to be played.

When you play a MIDI instrument, the sequencer remembers what time you play, which note (switch), and how long you hold the note (or keep the switch pressed ON). When the sequencer plays back, it electronically makes the same notes (switches) turn ON and OFF at the times you manually played them before, relative to the start time of the sequence.

If your instrument can only play one sound at a time, that's all MidiTrack ST can play. But if your instrument can play more than one sound at once (for example, a flute, trumpet, piano, strings, etc.) then the sequencer, when set properly, can also play those different sounds. In other words, it does electronically what you do manually.

MidiTrack ST's strength lies in its ease of use and the variety of options made available to you in order to create music the way you want to. For example, most of us have programmed a drum machine at one time or another and are familiar with the pattern method of sequencing. Many sequencers on the market use only this method to produce music. MidiTrack ST combines the best of loop recording and linear record to give you the most flexibility available. It allows you to not only generate patterns of music and chain them together, but also play both patterns and linear tracks at the same time.

There are literally hundreds of options; however, you only need to learn a few to get started. And all the features are always available to you, with no need to memorize any complicated key strokes or involved commands. Using the mouse it's really just a matter of pointing, clicking, and selecting the choices offered by the computer.

Once the basics are learned, there are Graphic and Text Editing features which give you incredible control over any part of your music. From visually drawing in the curve of a decrescendo over a period of bars, to correcting the placement of a note to a resolution of 1/96th of a beat, MidiTrack ST gives you an enormous amount of power.

Quantizing features not only let you auto-correct notes to any time base you choose, but also allows you to humanize your quantization to give it a more live feel.

The SmpteTrack II model of The MidiTrack ST Series includes a full SMPTE Read/Write accessory, covering 30FPS, Drop Frame, 25FPS, and 24FPS, and synchronizes directly to SMPTE Time Code at a resolution of 2400 times per second. It also utilizes many other forms of external synchronization such as FSK, TTL, PPQ, Audio Click, and our own HybriSync. Both SmpteTrack II and EditTrack II provide full MIDI synchronizing capabilities, including Song Position Pointer.

You get the picture: MidiTrack ST is an extremely powerful music tool. Both the program and the manual are written in an easy interactive style. We hope learning this piece of software will be a smooth educational experience for both novice and professional musicians.

ABOUT THIS MANUAL

Why Use This Manual

The reason for an owner's manual is obvious: it provides the necessary information to operate a machine, or in this case, a sophisticated piece of software. MidiTrack ST is an easy program to use; most functions can be figured out intuitively, without a need to reference the manual at all. However, there may come a time when you really want to discover the full power of MidiTrack ST, or you need a greater understanding of one feature or another, so a good operations manual is helpful. This manual has been written to complement the ease of use of the program, providing insight and depth for every feature but presenting it in such a way that having a degree in computer science isn't necessary to figure it out.

You are the one learning to use MidiTrack ST, and the time you invest in fully understanding how this tool works translates into how effectively you can make it work for you. Or how much fun you're going to be able to have with it.

How This Manual Is Organized

This manual has been organized so you can learn about the MidiTrack ST program quickly and easily. Each chapter is organized with a step-by-step learning process in mind. The manual starts out explaining basic operations (Setup, Recording, Track Copying), and goes on to explain more advanced features (Sections, Chains, Graphic Editing, Synchronization).

At the start of each chapter there is also a key word list: words and terms used in the chapter that are important to fully understand the material contained within it. It's a good idea to review these terms before reading the chapter for the first time so that you'll have a good grasp of the fundamental words involved.

The Table Of Contents lists the appendices that appear at the end of the manual. These are labeled after a prominent letter of the Appendix name so you can easily remember their contents: Appendix **A** - **A**pplication Notes, **G** - **G**lossary, **H** - **H**ybriSwitch, **K** - **K**ey Command Summary, **O** -- Overview, and **R** -- Menu Bar **R**eference (others may be added from time to time). ***There are no missing pages or sections***.

A detailed index and complete glossary of terms can be found at the end of the manual.

This manual assumes a basic knowledge of the Atari ST. If you haven't yet done so, please familiarize yourself with the ST owner's manual.

Suggested Study Habits

In studying the information in this manual, do not go beyond words you don't fully understand. There is an extensive glossary at the end of the manual containing the technical terms you'll find within these pages as well as a list of synthesizer and synchronizational terms used within the subject of electronic music.

You're going to be learning a very sophisticated piece of software, and the application of good study habits will go a long way in making the most of the time you're about to invest. If you come across a word you do not fully understand, look it up in the glossary or a regular dictionary, then restudy the materials. You'll find things start making a whole lot more sense very quickly. Although it may take a little extra time to clear up technical terms, you'll find your progress speeds up as you go.

*At this point, we recommend that you read **Appendix O -- Overview**. This Appendix glosses over main parts of the program without going into detail. In general, it covers the menus, tracks, controls, and important concepts. With a basic outline of "the whole picture" in mind, you will better understand the program and manual; and at the same time, you will be able to get much more out of this program as a result.*

SYSTEM REQUIREMENTS

To get your system working, you must first have the following items.

Required:
- An Atari ST computer*: 1040ST/STE, MEGA ST2 or MEGA ST4
- A Color or Monochrome Monitor
  (The program works in either Medium or High resolution)
- One Double Sided disk drive
- At least one MIDI-equipped instrument
- An audio playback system or set of headphones
- 1 MidiTrack ST Master Disk
- 2 or more MIDI cables
- SMPTEmate or SMPTEmate Plus interface (SmpteTrack II ONLY)

*An Atari 520ST will work if more memory is installed in its basic unit. A double-sided disk drive is also recommended (Master Disks are double-sided). However, single-sided Master disk set can be obtained by writing: Hybrid Arts, Inc., 8522 National Blvd., Culver City CA 90232

The following are optional items that help the system to work more effectively.

Optional:
- Additional MIDI-equipped instruments and MIDI cables
- An additional disk drive
- Hard Disk drive (for speed and storage)
- *Additional RAM (internally in the computer. See your Atari Dealer)

Note:
MidiTrack ST does not play music through the internal sound chips of the Atari ST.

CHAPTER 2
GETTING STARTED

In This Chapter:

- Package Contents
- Connecting Your System
- Loading The Master Disk
- Disk Contents
- Making A Backup
- Loading The Program
- Recording Music
- A Quick Tour Of Cycle Mode

Key Words:

- Buffer
- Interface
- MIDI In/Out/Thru
- Overdub

PACKAGE CONTENTS

Your MidiTrack ST package should contain:

- The MidiTrack ST Manual
- 1 MidiTrack ST Master Disk
- SMPTEmate or SMPTEmate Plus interface (SmpteTrack II ONLY)
- Registration & Warranty Card

If your package is not complete, call your Hybrid Arts dealer or supplier.

Please...

Before going any further, fill out your warranty/registration card and mail it in. This is IMPORTANT so that we can notify you regarding future updates or changes to MidiTrack ST.

CONNECTING YOUR SYSTEM

Connecting SMPTEmate (SmpteTrack II ONLY)

These instructions are for users who have the SMPTEmate hardware box (a small grey box with two cables connected to it).

You must connect your SMPTEmate box to your ST so MidiTrack ST can load properly. Both cables must be connected.

To Connect Your Sync Box:
- Connect the large connector cable to the RS-232 (modem) port
- Connect the small cable connector to joystick port #1
- Your mouse should remain connected to joystick port #0

Connecting SMPTEmate Plus (SmpteTrack II ONLY)

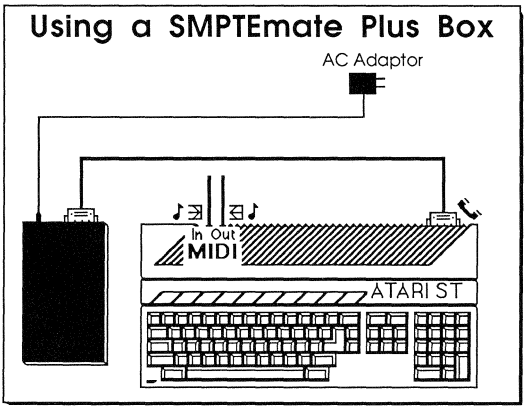
These instructions are for users who have the SMPTEmate Plus hardware box (a SMPTE interface box with informative status lights and a power switch on the front panel, and single cable connection to the computer, with power from the wall).

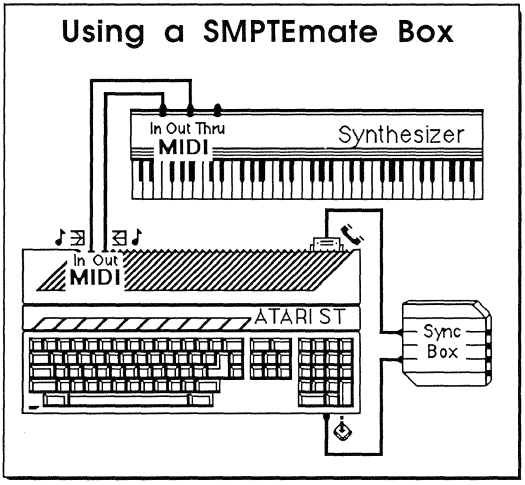
You must connect your SMPTEmate Plus to your ST so MidiTrack ST can load properly. The unit must be turned ON for the computer to recognize it.

To Connect Your Sync Box:
- Connect one end of the grey connector cable to the RS-232 connector on the rear panel of the box
- Connect the other end to the RS-232 (modem) port on the rear panel of your Atari ST
- Connect the AC adaptor to the POWER jack on the rear panel of the box
- Connect the other end into a proper AC outlet
- Turn the power switch (located on front panel) to the ON position (UP)
- The power indicator will light

Connecting To MIDI

In order to hear any music from MidiTrack ST, you'll need to connect it to an external synthesizer via MIDI. The basic hookup requires two MIDI connections: the MIDI Out of your synthesizer to the MIDI In of the ST and vice versa.





LOADING THE MASTER DISK

The Master Disk contains all information necessary for starting the computer and loading it with the proper Accessories associated with the MidiTrack ST program. It also contains utility programs for use with MidiTrack ST.

The Desk Accessories are loaded when the computer is first turned ON. The disk in the main drive (usually drive A by default) is where the accessories are loaded from. If the disk doesn't have any accessories, NONE WILL BE LOADED. To reload new accessories, turn the computer OFF, insert a disk with the proper accessories on it, then turn the computer ON.

To Load The Master Disk:
- Insert the Master Disk in drive A
- Turn the computer ON

If you turned ON the computer with another disk other than the Master Disk, the proper accessories may not be loaded. If this is the case, repeat the above procedure. See your Atari ST owner's manual for further details.

After the system loads all of the accessories, the next step is to load the program.

Note:
Because the program has become so large, it may be good advice to understand how and when desk Accessories are loaded. Another good concept to look into is that of RAM. In general, get to know how it is used up and how you can add more to your computer. As this program gets more and more professional, it will need more and more RAM to be able to run properly.

DISK CONTENTS

This package contains one double-sided Master Disk. (A single-sided disk set can be obtained from the factory. Please fill out the request on your Warranty Card and send it in.) It should contain the following files (not necessarily listed in the order shown):

		SmpteTrack II	EditTrack II
MASTER DISK			
Root Directory		SMPTETRK .PRG	EDIT_TRK .PRG
		MTST .REL	MTST .REL
		SYNCBOX	
		DESKTOP .INF	DESKTOP .INF
		AUTOLOAD .UPR	AUTOLOAD .UPR
		FACTORY .UPR	FACTORY .UPR
		CONTROL .ACC	CONTROL .ACC
		SYSXPRSS .ACC	SYSXPRSS .ACC
		SYSXPRSS .DOC	SYSXPRSS .DOC
		LGSELECT .TXT	LGSELECT .TXT
		SMPTEMTE .ACC	
		SMPTEMTE .PRG	
AUTO	Folder	LGSELECT .PRG	LGSELECT .PRG
EXAMPLES	Folder	EXAMPLE .SET	EXAMPLE .SET
		CHAINDEM .SNG	CHAINDEM .SNG
		MOONJIG .SNG	MOONJIG .SNG
		SAMPLE .SNG	SAMPLE .SNG
		CYCLE .SNG	CYCLE .SNG
		1FOR_SET .SNG	1FOR_SET .SNG
		2FOR_SET .SNG	2FOR_SET .SNG
		3FOR_SET .SNG	3FOR_SET .SNG
		MACROS .UPR	MACROS .UPR

The disk has been set to write protect ON (the tab is positioned so you can see through the hole). This is set ON so that the information on the disk can't be erased by mistake.

IMPORTANT

If there is a file called **READ_ME** on the disk, it contains information that was discovered after the manual went to print.

To Read The READ_ME File:
- Double Click on the file called **READ_ME**
- Click SHOW
- The text from the file will be displayed on the screen
- Press the Space Bar to continue Scrolling

MAKING A BACKUP

The MidiTrack ST disk is not copy protected. Before you begin, you should make a backup copy of your disk and use this backup as your working copy, storing the original in a safe place.

SmpteTrack II looks to see if the appropriate hardware is connected when you boot up, and if it is not connected it will not allow you to enter the program. This means that you can make as many software backups as you need, but only authorized users with the correct hardware can use SmpteTrack II.

EditTrack II users are legally allowed to make one backup copy for their files. Copying Files is different from Copying Disks. This is fully explained in your Atari ST Owner's Manual.

Double-Sided Disk Drive Users

1040ST and MEGA computers come with Double-Sided drives. (These drives can be purchased separately for any of the Atari ST or MEGA computers.)

To Make A Back Up (Using 1 Disk Drive):

- Format a disk Double-Sided (**726016** bytes on disk)
- Insert your Master Disk in drive A
- Click on FLOPPY DISK A once and hold the left mouse button
- Drag Drive A over to Drive B until Drive B inverts
- Let go of the mouse button
- An Alert box appears explaining that doing this will erase all of the information on FLOPPY DISK B
- Click OK
- This runs an Atari disk copy program
- When prompted to swap disks:
  SOURCE is your Master Disk (Disk A)
  DESTINATION is your newly formatted blank disk (Disk B)
- Click COPY
- Disk A will be copied to Disk B
- When the Disk Copy program returns, Click EXIT

If you have another disk copy program, follow the instructions for that particular program. MAKE SURE TO LABEL YOUR BACKUP DISKS.

Hard Disk Users

If you have a hard disk drive, you can copy MidiTrack ST to it without any problems. If you put the program into its own folder, make sure you put the necessary accessories outside the folder on the correct directory. If you BOOT off of a Hard Disk Boot Disk, make sure you have accessories on Drive A or Drive C -- not both. If your hard disk is set to AUTO-BOOT, you must have your accessories on the root directory of Drive C.

For Hard Disk users, you need to follow these steps to install the Little Green Selector on your Hard Disk.

To Install LGSELECT On A Hard Disk:

- Insert the MidiTrack ST Master Disk
- Open the **AUTO** Folder
- Open partition C on your Hard Disk
- If you have not already done so, create an AUTO Folder on partition C
- File-Copy **LGSELECT.PRG** from drive A to drive C
- Reboot your computer

The above description assumes your hard disk has Auto-Boot. If it does not, copy **LGSELECT.PRG** from the Master Disk to an **AUTO** Folder on the floppy disk you boot your hard disk from.

If you want to use a different file selector after installing the Little Green Selector (which is provided on your Master Disk), remove **LGSELECT.PRG** from your **AUTO** Folder and reboot your computer.

Special Note for Single-Sided Disk Drive Users

Atari 520ST computers usually come packaged with Single-Sided drives. MidiTrack ST is shipped on a double-sided disk. If you have upgraded your 520 by adding more RAM (1 MEG REQUIRED for MidiTrack ST), it is still possible to run the program on your 520ST with single-sided disks.

If you have access to a double-sided drive, and you would like to create your own set of single-sided disks, please follow these steps carefully.

To Format A Disk Single-Sided (from the DESKTOP):
- Insert a blank disk in drive A
- Click once on FLOPPY DISK A (it inverts)
- Select Format from the File menu
- Format the disk Single-Sided
- The number of bytes on a Single-Sided disk is 357376. If this number matches the number on the screen after the formatting is complete, the disk has been properly formatted.
- Click OK, then click EXIT (to exit from the Format program)

Now what you need to do is split the Master Disk into 2 parts.

To Create A Single-Sided Master Disk Set:
- Format 2 disks to be Single-Sided
- Label one disk "BOOT DISK"
- Label the other disk "PROGRAM DISK"
- Copy these 3 files from the Master Disk to your PROGRAM Disk

	SmpteTrack II	**EditTrack II**
PROGRAM DISK	SMPTETRK .PRG MTST .REL AUTOLOAD .UPR	EDIT_TRK .PRG MTST .REL AUTOLOAD .UPR

- Copy the remaining files from the Master Disk to your BOOT Disk

Once you have a 2 disk set, to run the program, load the Boot Disk first, then insert the Program Disk and Double-Click on the program name.

Note:
Future versions of this program will *not* fit on a single-sided disk. We recommend you purchase a double-sided disk drive as soon as possible, and only use a single-sided disk as a temporary measure.

LOADING THE PROGRAM

After the system loads all of the accessories, the next step is to load the program.

To Load The Program (SMPTETRK.PRG / EDIT_TRK.PRG):
- Double-Click on the program name
  or
- Click on the program name
- Select Open from the File menu

MidiTrack ST is now loading. This process is signified by the program name displayed at the title line at the top of the screen and a Busy Bee hard at work loading the program for you.

If you get the message "*STOP. No Sync Box connected*!!" it means the SMPTEmate or SMPTEmate Plus box is not properly set up. Check your connections and click **Retry** or reload the Master Disk.

RECORDING MUSIC

If you have an instrument correctly connected to the MIDI ports of the Atari, MidiTrack ST will record anything you play on that instrument.

To Record Music:

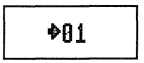
- Click on the PLAY button

If you have your monitor sound up, you'll hear a metronome start counting at a tempo of 120 beats per minute (the default tempo). You'll see the little metronome icon begin ticking

- Play some notes on your instrument
- As soon as you press any key on your instrument, the KEEP button will become highlighted. This means that MidiTrack ST has received some MIDI information and is storing it in the Record Buffer.
- As soon as you're done playing, click on the STOP button

Whatever you have played is stored within the Record Buffer, and you'll need to assign this information to a track. ***Unlike a traditional Multi-Track recorder, you select the track AFTER you've recorded some music.***

To the left of your screen you'll see a column of numbers from 01 to 20. These are the first 20 tracks. Directly to the left of number 01 you can see a small arrow, which is an indicator to show you which track you are about to access.



Since it's already pointing to track 01, we'll save our music there.

To Save What Is In The Record Buffer:
- Select an empty track to save on (track 01 is initially selected)
- Left Click on the KEEP button

The KEEP button turns grey (meaning the information is no longer stored in the Record Buffer) and a small * appears to the right of the track number for track 01. This signifies some change has been made to the track and has not yet been saved to disk.

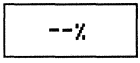
To Hear What Has Been Recorded:
- Click on the PLAY button

To Add Another Part:
- Click the PLAY button
- Play an additional part on your instrument in time with the music on track 01
- As soon as you begin playing, the KEEP button is highlighted
- When you're finished, click on the STOP button

You'll now need to put this part on a separate track.

To Save Overdubs:

- Select an empty track by clicking on its track number

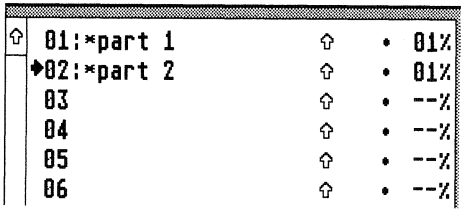


You can tell a track is empty because there is no colon (:) to the right of the track number and the memory percentage shown for that track is - - %

- Left Click on the KEEP button
  (Optionally, if you Right Click on KEEP, it will find the next empty track for you, automatically, avoiding the previous step)

The KEEP button greys and an * appears to the right of the track number

- If you click the Play button once again, you'll hear both tracks 01 and 02



You can keep building tracks this way until all the tracks are filled up. Congratulations! You've just learned the basics of recording using MidiTrack ST.

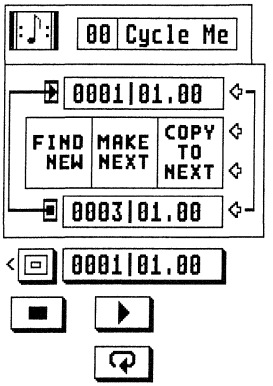
A QUICK TOUR OF CYCLE MODE

There are many ways you can record into MidiTrack ST. What you just learned on the previous pages is called "linear" recording (in a straight line).

Another way to enter music into the program is by "Cycling". This is a mode where you set up an area to record in, and then it cycles around that section. Each time it loops around, you can add a new part to what already existed.

We've created a quick example song file for you to experiment with while learning Cycle Recording. It's on the Master Disk (which should still be in the disk drive) inside the **EXAMPLES** Folder.Cycle Recording

To Prepare To Cycle:
- Pull down the File menu (point to the word File)
- Left Click on Load SNG/MID File from the File menu
- The disk will spin and show you the disk contents
- Click once on **EXAMPLES** (the little "diamond" indicates a folder)
- The Folder will open and show you what's inside
- Click once on the song file **CYCLE .SNG**
- Click OK
- The example song will load in. There's that busy bee again!

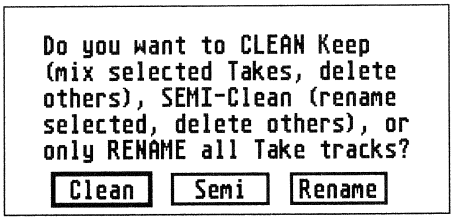


To Cycle Record:

- At the bottom of the right side of the screen, there is a button with a Cycle Loop drawn inside
- Left Click on that Cycle/Loop button
- You will see tracks 1 and 2 highlight (blacken)
- Left Click on the PLAY button (above the Cycle/Loop button)
- Tracks 1 and 2 will begin to Cycle between bars 1 and 3
- You will also hear the metronome click (if speaker volume is up)

If you would like to add your own part to this section, Left Click once on the track name "chords". It will stop playing in the Cycle and the bass part will play on. Anything you now play will be recorded in the Cycle. Click on STOP when done adding to the Cycle.

Note:
If you STOP the Cycle, you will be prompted to Clean Up what you've done. The details of each choice will be explained later. For now, just Click on Clean.



CHAPTER 3
BASIC OPERATION

In This Chapter:

- A Tour Of MidiTrack ST
- Tracks
- Recording
- File Management

Key Words:

- Backup Files
- Bounce
- Buffer
- MIDI Channel
- Overdub
- Punch-In/Punch-Out
- Root Directory
- Step Record
- Ticks

A TOUR OF MIDITRACK ST

Program Design

Every effort has been made to make MidiTrack ST an easy program to operate. It is a very visual system: you place MIDI information on separate tracks, each of which you can name, protect, mute and deal with in a wide variety of ways. You have the equivalent of VU meters with graphic symbols appearing to denote the presence or absence of notes. There are no pages to flip through in order to view the key information you need to know; it's always right in front of you, always tracking in real time.

Help Menu

Help dialog boxes appear as reminders to how features work. This is also helpful as a quick reference if you don't have your documentation handy.

The menu entries title themselves and bring up lots of the dialog boxes that contain the helpful text as reminders of how to perform a particular operation.

This is also useful for demonstration situations, and is intended to get a person started on appreciating the ease of use of the program.

Use The Mouse And/Or Key Commands

Commands are given either by pointing and clicking with a mouse, or by using the computer keyboard with pre-programmed mnemonic keys (meaning keyboard commands are linked as much as possible to the first letter of the function being used, eg. Mix uses the letter M). Using the computer keyboard requires, with a few exceptions, that you press down two keys at the same time; for example, the Control Key and a letter. For example, if you wanted to access the Copy tracks function you could press the Control key and the letter C. Of course, you could just as easily select Copy Track from the Edit menu.

In addition, there are a few combinations of mouse button clicking you should be aware of. There are different types of clicks: Left, Right, Both Click (both Left and Right button at the same time), Short, and Long (click and hold a button for 1/4 sec. or longer). The word Click by itself implies a (Short) Left Click. Shift-Click means clicking while holding the Shift Key on the computer keyboard.

The mouse auto-repeats if you click at anything that you can click on multiple times to go through a bunch of values (including individual digits wherever you can digit-by-digit edit values) and hold down the button for half a second or more, it will start auto-repeating (simulating repeated clicks) at the rate of about 12 clicks a second.

Every basic function is available all the time. As you become more familiar with the program, you may find yourself favoring one or the other methods of control, either mouse or computer keyboard, but more than likely you'll be using a combination of both. The software is designed to make it easy for you to use, whether you are a brand new user or a seasoned expert.

Refer to Appendix K for a table of key command equivalents

Non-Destructive Editing

Another design philosophy incorporated within MidiTrack ST is that of non-destructive editing. Nothing you do within a track is permanent, whether it's a simple quantization or a micro-edited sixteenth note. When you finish with an edit, you may save the edited version to any track. If you feel confident that the changes you've made are ones you want to keep, you can place the edited version over the previous one. However, if you want to retain the original version, even if it's just for safety's sake, select another track and put your altered data there. This way, if you're unhappy with the changes, you always have the original stored on another track.

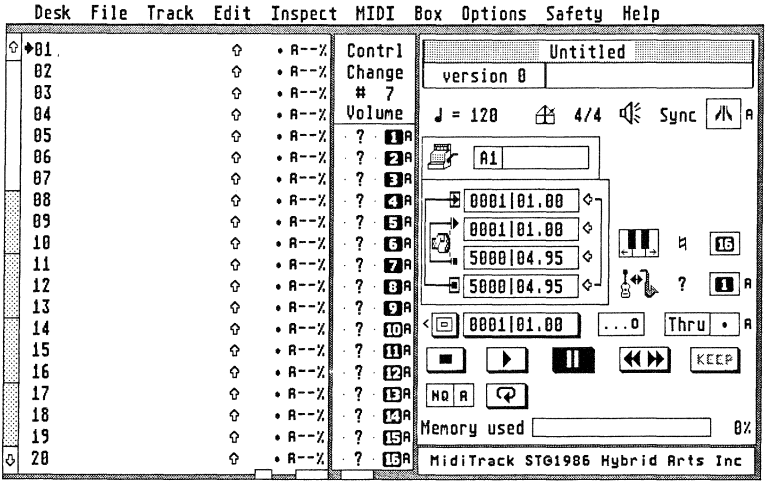
As much as possible MidiTrack ST protects your work from inadvertent errors. You can protect individual tracks so that you cannot save new or altered data to them. You can have the program warn you if you are about to replace or erase a track. If you overwrite a song file on disk, MidiTrack ST will automatically make a backup copy of the previous file, if you so choose.

In short, great care has been made to ensure as much safety as is possible to protect the work you'll be creating using MidiTrack ST. The design philosophy of Hybrid Arts is that of non-destructive editing, so you can feel free to experiment as much as you like without worrying that your original ideas will be erased.

At this point, please look through **Appendix O -- Overview**. This gives you an "At-A-Glace" look at the most important Modes, Track Types, and Settings found in the program. Refer to it to get a broad idea of the structure of the program.

The Screen

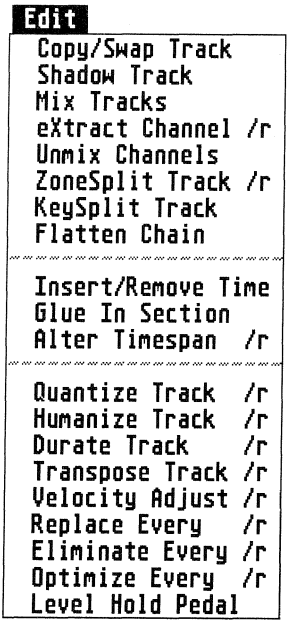
The screen is divided into three main parts: the Track Display on the left, the Control Display on the right, and the Control Column in the center of the screen. The Menu options are available from the drop-down menu bar across the top of the screen. All functions are accessed from this screen, and although there are subsequent screens used to display other information (such as editing tracks or chaining patterns), this is the main screen from which you control all functions of MidiTrack ST.



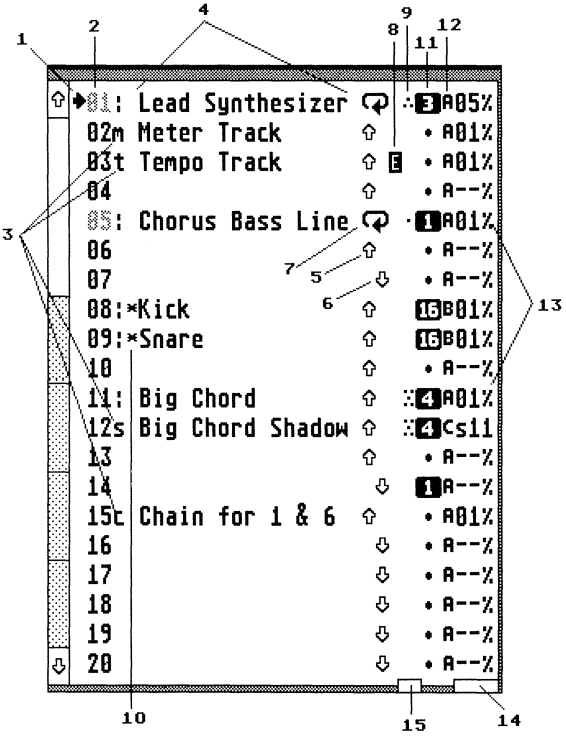
The Menu Bar

The Menu Bar contains many of the functions within the program. To access any Menu function, point the mouse at any menu name (for example, **Edit**). The menu will drop down. Now move the mouse to the desired function. Once the function inverts, click the Left button once.

Note:
The menu functions which have a slash (/) somewhere in the title perform different functions depending on whether you select them with either the Left or Right button. The details of each function can be found in later chapters.



The Track Display

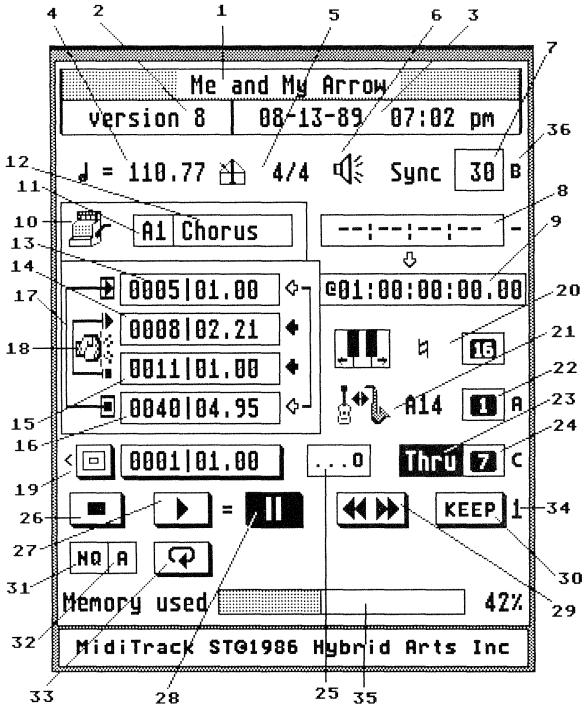


[1] Track Pointer
[2] Track Number (half-toned if protected)
[3] Track Type Indicators (blank if track is empty)
[4] Track Name
[5] Track Unmuted (ON)
[6] Track Muted (OFF)
[7] Track Under Chain Control
[8] End Of Track Indicator
[9] Track Activity Indicator
[10] Track Changed Since Last Save
[11] Track MIDI Channel Column (Output Assignment)
[12] Track Port (with MidiPlexer Only)
[13] Multi-Function Column
(Percentage Of Memory Used By A Track shown)
[14] Multi-Function Switch
Switches between:
(1) Percentages
(2) Offsets
(3) Transpose
(4) Chain Activity
[15] Track Activity Switch
Switches display view between:
(1) Dice (default)
(2) Numeric (**1234567890+**)
(3) Bar Graph
(4) Shift Characters (**!@#$%^&*()+**)

The Track Activity indicators show how many Notes are being played simultaneously (per track). The dice show up to 10 dots indicating 10 Notes playing (11 or more notes show a **+**).

The picture to the left is an example of how the Track Display may look during a session. It shows MIDI information & activity, track names, different Track Types (MIDI/Shadow/Chain/Meter/Tempo tracks), etc.

The Control Display



Notes:
The Memory used bar and percentage indicate how much of the total song memory available has been used. Editing operations require varying amounts of free memory for temporary storage. Select Note Capacity from the Options menu (or Press Control Alternate Shift N) to get a readout of the amount of total song memory available; this memory amount will vary depending on how much RAM you have in your Atari ST, and what other programs (desk accessories, HybriSwitch, some AUTO folder programs, etc.) are in memory when you run MidiTrack ST.

The Note Capacity will not decrease as you fill up memory used. It always shows the total current for what's available to the program.

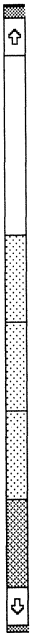
The information is explained from top to bottom, left to right:

1. Song Name
2. Version # Of The Current Song
3. Date (MM-DD-YY) & Time Of Last Save
4. Tempo Setting (Ultra-Fine Tempo Setting Optional)
5. The Metronome / Displayed Time Signature
6. Metronome Sound On/Off/Mode
7. Synchronization Type (Internal, MIDI, SMPTE Type or External)
8. SMPTE Sync Time (Hours:Minutes:Seconds:Frames)/Sync Status
9. SMPTE Start Time (Hours:Minutes:Seconds:Frames.Bits)
10. Register/Section Mode Indicator (Register Mode shown)
11. Current Register/Section (default Register A1 is shown)
12. Register/Section Name (max length = 8 characters)
13. Start Time
14. Punch-In Time (Register Mode ONLY)
15. Punch-Out Time (Register Mode ONLY)
16. End Time
17. Locate Enable/Disable (shown Disabled)
18. Punch Enable/Disable (shown Enabled)
19. Silent Re-Cue / Counter Reset Button / Counter
20. Global Transpose / MIDI channel NOT affected by Global Transpose
21. Remote Patch Changer
22. Specific MIDI Channel/Port to Send Patch
23. MIDI Thru ON/OFF
24. MIDI Thru To This MIDI Channel/Port
25. Countoff
26. STOP
27. PLAY
28. PAUSE/CHASE
29. FF/REWIND
30. KEEP
31. Quantized Record
32. Record Filter
33. LOOP / CYCLE
34. MIDI Data Error Indicator (see Appendix T—Troubleshooting)
35. Total Memory Used For Song File
36. MidiPlexer Port Used to Output MIDI Clock (A or B only)

TRACKS

There are 60 independent tracks available at any given time, although due to space requirements you can only see twenty consecutive tracks at once.

Track Scroll Bar



In order to scroll through tracks there is a scroll bar at the left side of the Track Display. The bar is divided into 5 segments, allowing you to quickly select combinations of tracks to view. If you point to the first greyed area and click it you'll see the track numbers change from 1 through 20 to 11 through 30. Clicking the next greyed area will similarly increment the track numbers by ten so you are viewing tracks 21 through 40. It's easy to scroll because you can "slam" the mouse against the left side of the screen and not worry about whether you are right on it or not.

The arrows at the top and bottom of the scroll bar increment the track numbers by 1 with the Left button and by 5 with the Right. You are always seeing 20 tracks on your screen.

You can also scroll tracks from the ST keyboard by using the function keys:

F1 = tracks 1-20
F2 = tracks 11-30
F3 = tracks 21-40
F4 = tracks 41-50
F5 = tracks 51-60
F6 = scrolls to current location of Track Pointer

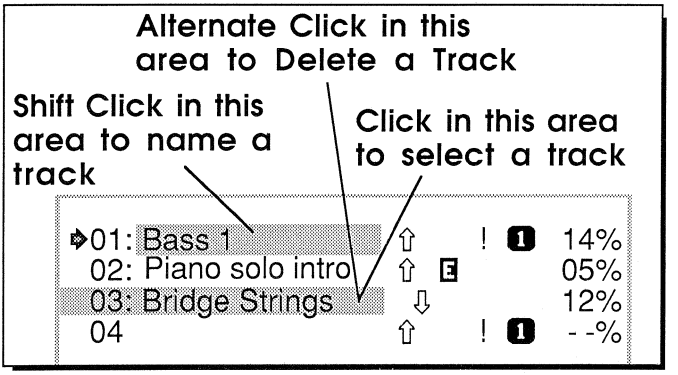
The Scroll Bar allows you to see 20 consecutive tracks at one time. There are a total of 60 tracks. Each group of 10 Tracks is represented by a segment of the scroll bar. If the segment is "lightly" shaded, all 10 Tracks in that part of the scroll bar are empty. If the segment has a darker shade, at least 1 of those 10 Tracks which make up that segment has information on it.

You can look at the shades of the scroll bar to see if there are any tracks with information on them outside of the 20 you are currently viewing. In the picture: you're viewing Tracks 1 - 20; Tracks 21 - 50 are empty; and there is information on at least one of the tracks in the last segment (Tracks 51 - 60).

Track Selection

To the left of the track numbers you will see a small arrow; this is the track selection indicator or pointer. Its function is solely to determine which track is selected or about to be accessed.

To SELECT A Track:
• Click once in the area shown



The Track Pointer will move to that track.

Notice the separate clicking areas for selecting and naming a track.

To SELECT A Track Using The Keyboard:

- Press the Up or Down arrows on the Atari ST keyboard.
- As you press the key, the pointer will go up or down one track at a time, depending which directional arrow you press. (The UP/DOWN arrows will not scroll to a track off the screen.)

Press This Key On The Computer Keyboard	**To Select This Track On The Screen**
1	1st (top) Track Shown
.	.
.	.
.	.
0	10th Track Shown
Shift 1	11th Track Shown
.	.
.	.
.	.
Shift 0	20th (bottom) Track Shown

For example, if track 17 is the first visible track on the screen, then pressing the number 1 to select track 17, press Shift 9 to select track 35, and so on.

At any given time, there is enough room for 20 tracks on the screen. The numeric key commands will only select the track relative to one of those 20 tracks.

Note:
The numeric keys are those above the ST keyboard, not those on the numerical keypad to the right of the ST keyboard.

Find Next Empty Track

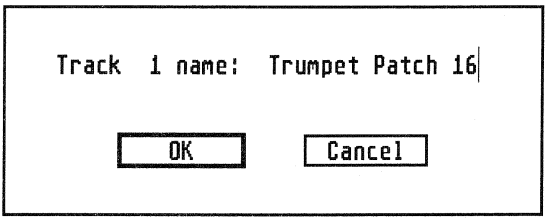
The Help key finds the next empty track. It always finds the next empty track in ascending order from the current Track Pointer location. If you are currently at Track 60 (which is currently used) and press Help, it automatically wraps around to Track 01 and continues searching from there.

Naming Tracks

Each track can have a name containing up to 16 characters. This allows you to organize your tracks depending on your preference and keep a visual reference as to what is contained on each track.

To NAME (or RENAME) A Track:

- Shift-Click or Both Click on the Track Name Area of the track you want to name (see Track Selection picture above)
- Type in up to 16 characters



- Use Esc to clear an existing name
- Use Backspace to erase one character to the left of the cursor
- Click OK

The dialog box disappears and the track you selected now has a name.

Note:
Track names can be used as memo pads for writing general notes about the song, remembering patch settings, etc.

To NAME A TRACK From The ST Keyboard:
- Select the Track you want to name (use Up/Down Arrows, etc).
- Press Control N. This will bring you to the initial dialog box.

Track Protection

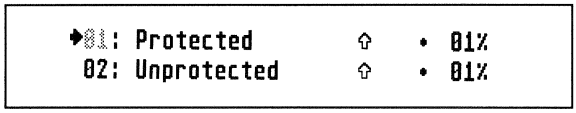
You may protect individual tracks from changes or accidental erasure. This feature is a software "write protect" which prevents you from writing over an important track. You can edit a protected track as long as you save the changes to an empty unprotected track.

To PROTECT A Track:
- Select the track you wish to Protect
- Select Protect from the Track menu OR press Control P

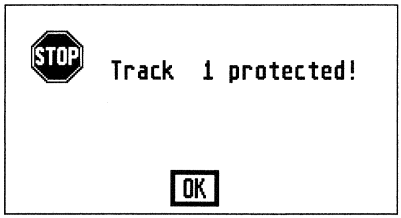
The Track Number becomes half-toned (greyed-out) indicating that the track is now protected.

To UNPROTECT A Track:
- Select the Protected track you wish to Unprotect
- Select Unprotect from the Track menu OR press Control Shift P

The Track Number returns to normal (black), indicating it is unprotected.



If a track is protected and you try to save something on it, you will see the following warning:



Save the edit to an empty track. If you select an already protected track, click OK and try again. To cancel the edit, press Undo.

Turning Tracks ON and OFF

On the Track Display.

Directly to the right of the track name is an arrow pointing up or down. This arrow represents the mute function for the track; up means it is not muted (ON) and will play back the information stored on the track, down means the track is muted (OFF) and won't be heard. In addition, tracks can be soloed (all tracks OFF except the one that is selected) and Bowed-Out (all tracks are ON except the one that is selected).

To Do This	**Click These Mouse Buttons On A Track's ON/OFF Arrows**	**Select A Track, Then Press These Atari ST Keyboard Keys**
Mute A Track	Click RIGHT	Shift DOWN ARROW
Unmute A Track	Click LEFT	Shift UP ARROW
Solo A Track	Click and Hold LEFT Then Click RIGHT	Control UP ARROW
Bow-Out A Track	Click and Hold RIGHT Then Click LEFT	Control DOWN ARROW
Mute ALL Tracks	Solo A Track Then Mute It	Control Shift DOWN ARROW
Unmute ALL Tracks	Bow-Out A Track Then Unmute It	Control Shift UP ARROW

Deleting Tracks

This is the function that erases all information on a track. When you attempt to do this, a dialog box will appear, verifying your intention to delete the track, as this action will destroy anything you have on the track and you may NOT reverse the process. Be sure that's what you really want to do before erasing the data on the track.

Delete a track by Alternate Clicking on it. There are different parameters that are associated with a track:

- Information on the Track (MIDI, Shadow, Tempo, Meter, Chain)
- Output Channel/Port
- Name
- Offset
- Transpose Amount

To DELETE A Track:
- Point to the track you want to delete
- Alternate Left Click to delete Information and Offset
- *Alternate Right Click to delete all settings listed above*
- If Deleting Safety is checked, a dialog box will appear verifying your decision to erase the track (Click Delete or press Return)

To DELETE TRACK Using Key Commands:
- Select the Track you want to delete (with Up / Down Arrows, etc).
- Press Control Shift D to delete Information and Offset.
- Press Control Shift Alternate D to delete all settings (listed above).

Notes:
If the track is empty (no Information), but other settings could be reset, then if you Alternate Right Click on the track, it will reset all settings.

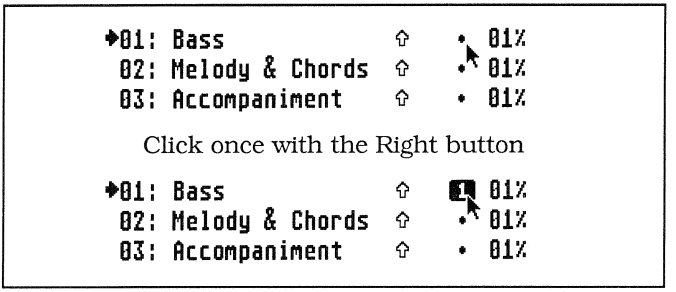
If the Deleting Safety is unchecked, it is possible to quickly delete many tracks (just make sure you aim carefully).

If you delete all settings on a track that has shadows, it will delete all settings on the shadows, too.

Assigning MIDI Channels

You can assign any one of the 16 MIDI channels to any track (or if you're using a MIDIPLEXER, you may assign up to 64 separate MIDI channels).

To ASSIGN A MIDI Channel:
- Point to the Track MIDI Channel Column (initially shown as dots)
- Click with the RIGHT button to increase the MIDI channel number
- Click with the LEFT button to decrease it



To ASSIGN A MIDI Channel From The ST Keyboard:
- Select a track
- Press Shift] to increase its MIDI channel number
- Press Shift [to decrease it
- Press Control 1 through Control 0 to assign MIDI channels 1 though 10
- Press Control Shift 1 through Control Shift 6 to assign MIDI channels 11 through 16
- Press Control Shift 0 to reset the MIDI channel assignment to its original unassigned status

For example, if you press Control 4, then MIDI channel 4 (shown as a TV GUIDE style channel 4 indicator) is assigned to that track.

If a MIDI channel is not assigned (shown as dot), all channel data on that track will play back as it was recorded. For example, if the keyboard you are playing is set to MIDI channel 1, the recorded information will playback on MIDI channel 1. Also, if two tracks with two different MIDI channels are mixed, and the destination track has no MIDI channel assigned, that track will play back both channels correctly.

Assingning MidiPlexer Output Ports

When using the MidiPlexer, you can assign each track to one of four Output Ports: A (the internal MIDI Out port on the Atari ST), B, C, or D (the three extra MIDI Out ports on the MidiPlexer).

Each MidiPlexer Output Port can send a separate set of 16 MIDI Channels over a separate MIDI Cable. While any Track in MidiTrack ST can support up to 16 Channels, you need to use multiple Tracks to send on multiple MidiPlexer Ports.

For each track, the MIDI Channel (see above) and Output Port are set independently.

To ASSIGN An Output Port To A Track:
- Point to the Track Port Column (each Track defaults to Port A)
- Right Click to step forwards through the Port letters (A, B, C, D, A)
- Left Click to step backwards through the Port letters (A, D, C, B, A)

To ASSIGN An Output Port Using Key Commands:
- Select a track
- Press Shift ;
- Each press steps forward through the Port letters (A, B, C, D, A)

Note:
If your MidiPlexer loses power (possibly your hamster just munched on the AC adapter cable?) while MidiTrack ST is playing, you will get a series of status messages which allow you to reinitialize the MidiPlexer (after you scold the hamster and repair the cable!) or continue operation without it (at least long enough to Save your song!).

RECORDING

No matter which method you'll be using to arrange your music, you'll still need a good grasp of the recording fundamentals built into MidiTrack ST. Although the program allows you to sequence music in many different ways, the basic recording method is the same. MidiTrack ST has been laid out in a similar fashion to a multi-track tape recorder using analogous controls that most musicians are already familiar with. This section covers the operation of these controls.

The Record Buffer (also known as The KEEP Buffer)

It is important to understand how MidiTrack ST is recording. As soon as you press PLAY, it will record whatever you play on your instrument. When you play a key, change a patch, or use the Pitch or Mod wheels, MidiTrack ST stores that MIDI information in its Record Buffer.

The MIDI information remains in the Record Buffer until you do one of two things: click on the KEEP button (which stores the data from the buffer to a selected track), or cause the program to do a Cue Operation (which wipes the buffer out so it can recieve new MIDI data).

Cueing could be caused by pressing or selecting any of the following: PLAY, FF/REWIND, SMPTE chase, Counter Reset, switching between Register and Section mode (if there are Chains defined), setting the Meter/Metronome options, and/or any Track edit operation (Track Delete, Quantize, Transpose, etc).

This same method holds true when you are editing a track: changes are placed in a buffer. When you have finished editing, you can either save these changes to a track or Cancel the operation (usually by pressing the Undo key).

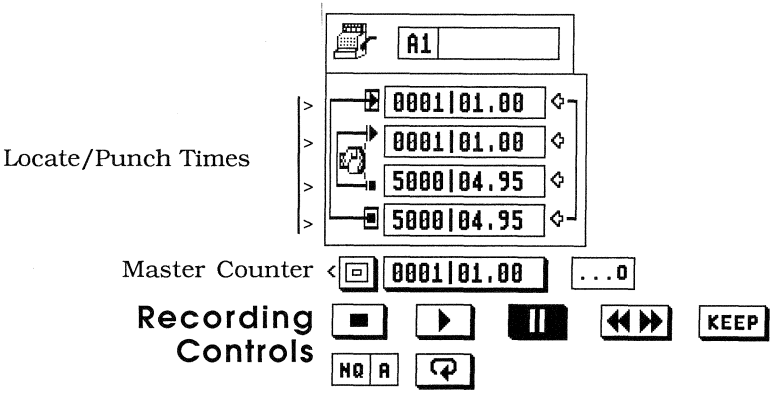
You store music and other information on tracks AFTER THE FACT of performing or creating it, not before as in conventional recording techniques. This also means you can always overdub tracks without worrying about assigning a track or recording over music you want to keep.

WHENEVER MIDITRACK ST IS IN PLAY, IT IS ALWAYS RECORDING. In fact, MidiTrack ST is always recording even when it's in PAUSE.

It records exactly what you play when you play it. Quantization and all other forms of music processing are usually done AFTER the information has been stored to a track, not during recording.

Record Controls

The Recording Controls are shown below:



In order of sequence these buttons represent the following functions:

STOP

This stops MidiTrack ST and also turns off any MIDI Notes at the point where it was stopped. The equivalent key command is the Return key.

Note:
When you press STOP, PAUSE becomes highlighted. You can continue playing from where you stop by clicking PAUSE or pressing the Tab key.

PLAY/RECORD

This button starts MidiTrack ST, playing from the start (either the beginning of the track or the Start Time if one has been set and Locate activated), and automatically places it in record mode. Pressing the Space Bar is the equivalent key command.

PAUSE

This will cause MidiTrack ST to pause during playback, and any MIDI notes currently ON will remain ON. To continue playing from the point paused, click PAUSE again. Press the Tab key as an alternate way to pause.

Note:
You may continue playing from wherever you pause by clicking PAUSE or pressing the Tab key a second time.

FORWARD/REWIND

This operates like a conventional recorder, rolling the location of the music forward or backward.

FORWARD
- Point at the FF/REWIND icon
- Click and hold the Right button
- MidiTrack ST keeps rolling forward until you release the mouse button.
- **Click PAUSE to continue if you're in PAUSE mode**

REWIND
- Point at the FF/REWIND icon
- Click and hold the Left button
- MidiTrack ST keeps rewinding until you release the mouse button.
- **Click PAUSE to continue if you're in PAUSE mode**

KEEP

This KEEPs the recorded music that currently exists in the Record Buffer of the computer.

To Selected Track
Left Click on this box to perform the transfer FROM the Record Buffer TO the selected track.

BEFORE Left Clicking on the Keep icon ALWAYS SELECT THE TRACK YOU ARE GOING TO KEEP YOUR MUSIC TO.

To Next Empty Track
When you Right Click on the KEEP button, it automatically finds the next empty track and then saves the information from the KEEP buffer. That way you don't have to go searching for the track yourself (by moving the Track Pointer and then clicking KEEP).

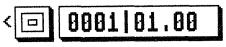
When you KEEP a Track in Register mode, it automatically Unmutes that track.

You can wipe the contents of the KEEP Buffer without stopping playback by Alternate-clicking on the KEEP button.

Key Commands
Left Click = Shift Enter
Right Click = Alternate Enter
Wipe KEEP = Alternate Space Bar

If **Shift+Enter** is unchecked under the Safety menu, pressing just Enter will KEEP the Recorded information.

COUNTER



Directly above these controls is a counter. Instead of measuring feet of tape as a conventional recorder does, this one counts measures/beats/ticks (or beats/ticks) of time in increments of 96 ticks per beat.

To RESET The Counter:
- Click on the Reset button to the left of the Counter

OR
- Press Control Space Bar

(see Silent Re-Cue later in this chapter)

COUNTOFF

The Countoff provides one or two bars of metronome ticks before recording / playback starts. Click on the Countoff to cycle through the Countoff values.

Countoff Values:
...0 means no countoff.
...1 means 1 bar of countoff.
...2 means 2 bar of countoff.

To SET COUNTOFF Using Key Commands:
- Press Backspace until desired Countoff value is set.

The Countoff is ignored if you click on PLAY with the Right Button.

To IGNORE COUNTOFF Using Key Commands:
- Press ClrHome.
- Press Space Bar.

The only operation available during the Countoff is STOP. If, for example, you decide during the Countoff that you want to change a setting, you must first STOP and then make the changes.

LOOP PLAY

If you Right Click on the Loop Button while in Register Mode, you will be able to create a Loop between the Start and End Times. It automatically turns Locate ON and pauses at the End Time for a brief moment before re-Looping.

In Loop Play mode, the current Register is played repeatedly, with a slight pause between repetitions. This is not intended to be a recording mode. It can be useful if you want to make fine-tune adjustments to a mix, EQ, recording level, or other non-MIDI parameters.

Note:
You can not initiate Loop Mode while in MIDI or External Sync.

Note:
Additional Record Controls are described in Chapter 5. Just so you know what to look for, they are called Quantized Record, Record Filter, and Cycle Record.

Recording With the MidiPlexer

MIDI data received on the Atari MIDI In (input A) and the MidiPlexer input B is merged. Prior to merging, the channel(s) of MIDI data received at input B may be offset by the amount set in the MidiPlexer Input dialog box (MIDI menu).

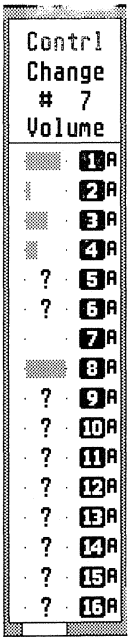
For example, if you wanted to record from two keyboards, both of which output on channel 1, you could set the MidiPlexer input B offset to +01, and the input B data would be recorded as if it came in on channel 2.

Note:
When playing back a lot of data on MidiPlexer output ports B, C, and/or D, if you notice that you're getting MIDI input data errors (ie, digits appear to the right of the KEEP button) while using the Atari MIDI In jack (input A), try using the MidiPlexer MIDI In (input B) instead. The MidiPlexer has priority over internal MIDI in the ST's processing, and thus input B can be much more reliable than input A in such circumstances.

Control Column

The Control Column is located in the middle of the screen. This column shows the activity of the following parameters in real time:

- Control Changes (#0 - #120)
- Patch Changes (see Chapter 6 -- Patches)
- Pitch Bend



The Control Column displays 16 MIDI channels at once. Each Channel has the ability to bring up a Fader which appears on the bottom of the Control Display. The Fader changes one of the above parameters, for a selected channel, and records the changes in real-time.

Clicking on the top of the Control Column cycles through the parameter types. If the top portion shows the name "Control Change" and the bottom gives other specifics, then only clicking on the top portion will change the parameter type.

Clicking on the control change number (any digit) increments/decrements it by 1. Clicking on the "#" sign or slightly to the left of it adjusts by 8. If you have Control Change Names defined (MIDI menu), these names will be shown in a text line below the Control Change number. By clicking on these names, it will step through just those control changes with names defined. That way you don't have to search through all of the numbers -- just click through the ones with pre-defined names instead.

The center portion of the Control Column shows 16 channel settings. For each of these channels it shows the last value sent for the current parameter.

If the parameter is Patch Change, the display shows patches set from the Remote Patch Changer (to the right of the screen), only now you can see 16 patch settings at once. When you use the Remote Patch Changer to change a patch, the corresponding channel in the Column will also change.

When you're viewing any of the parameters, it shows a single question mark (" ? ") if it hasn't sent that parameter yet. Be aware that once a value is shown on the Control Column, the value remains set until another change occurs for that value (even if you load another song).

The button at the bottom of the Column selects graphic or numeric display.

When values are displayed graphically, a blank display indicates a value of 0 for unipolar values, and the middle value for bipolar values. All other values are indicated by an appropriate meter length. (For more about Polarity, see Control Change Names in Chapter 6.)

When values are displayed numerically, they are shown as three digits between 000 and 127 (except Pitch Bend is shown as a signed 4-digit number). Pitch Bend is always treated as bipolar (plus or minus)

There are single-pixel (red in color) markers visible in the center column whenever you are in graphic display mode. These are exactly one pixel to the left and right of a full-width meter so you can easily see what percentage of the full meter you're looking at.

To reset any value to " ? ", Alternate Left Click on the value for that channel. To reset the entire Column, Alternate Right Click on any of the 16 values. You cannot reset a value if it has the Fader assigned to it.

The values are updated whenever the corresponding parameter is sent out, whether from playback, Thru, or using the Fader (see below).

If you are using the MidiPlexer, you can set the Control Column to monitor any 16 of the 64 possible MIDI Channels. Click on a Port letter to change it. Shift Click on a Port letter to change the entire column (for example, from all 16 channels of Port A to all 16 of Port B).

Notes For Control Column

- *While the program does allow you to set two or more lines of the Control Column to show the same MIDI channel, this is intended only to switch from one channel setting to another (for example, if you want the top line to display channel 2 and the second line to display channel 1, you have to momentarily have both of them displaying the same channel). Only the first displayed line of a given MIDI Channel changes.*

- *The Control Column always shows the last value sent on each channel. Since neither the program nor your instrument(s) forget that value, the Control Column doesn't change automatically when you load a new song or erase the current song.*

- *The processing overhead of updating the Control Column has been kept to the minimum possible. However, in extreme cases there is a possibility of timing errors due to the time it takes to draw the values/meters on the screen. If you are concerned about the utmost in timing accuracy, select a parameter which rarely or never changes in your song.*

THE FADER

To make changes to the Control Column parameters in real-time, click on any of the 16 values found on the Control Column (values default to " ? "). The Fader Bar appears and the Column reflects the numeric value shown (inverted) for the selected channel. Switch to another channel by clicking on the value of that other channel. Make the Fader Bar go away by clicking on the currently selected channel a second time (or Alternate-Click anywhere on the Fader).

The Fader Bar is a solid bar (blue in color) with 5 mark points that show the 0, 32, 64, 96, and 127 points (for Pitch Bend, full down, half down, centered, half up, and full up points).

There is a tiny square control knob, called the Fader, which is just below the Fader Bar. If you click-and-drag the Fader, it will move back and forth. Moving the Fader is relative to where you click. In other words, it is possible to "grab" the Fader without being right on it. If you click above the Fader Bar, the Fader will "jump" to that location. If you click below the Fader Bar, you must click-and-drag to move the Fader in increments of your choice (see Fader Resolution).

Once you have clicked, all parameter changes from playback or Thru are suppressed (not sent out) until you let up on the mouse button. Instead, you have control over that parameter while the mouse button is down.

Starting with the value at which you clicked, all fader changes are:

- Reflected in the numeric value display in the center column
- Sent over MIDI
- Placed into the KEEP buffer

Drag the Fader left and right to change the value smoothly; or click on the Fader Bar at any place to make the value jump there, in which case, you are letting go of the mouse to move it, so playback/Thru won't be suppressed.

Note:
When viewing Patch Changes, the Fader can not be activated. This view is for conveince, to see 16 patch settings at once.

Fader Resolution

There is some interactive control of the fader resolution:

Resolution Values:

• Left Click above Fader Bar	Jump to location
• Right Click above Fader Bar	Jump to nearest 4 or 8 step
• Click below Fader Bar	Doesn't move until dragged
• Left Drag Fader	Moves in steps of 2
• Right Drag Fader	Moves in steps of 4 or 8 (Fader Precision)
• Both Drag Fader	Moves in steps of 1

"Fader Precision" in the Options menu affects the resolution of right-button clicking and dragging, in which case you can choose between 4- or 8-step jumps.

Keep in mind that unnecessary use of too fine a resolution may result in an excessive amount of MIDI events being recorded/sent (which will both eat up sequencer memory and possibly cause timing problems). A setting of 2, the left-button resolution, will let you generate even-numbered values between 0 and 126, plus 127. This matches the display resolution of the Graphic Screen and is enough for audible smoothness in most applications. In fact, many parameters will sound smooth even at resolutions of 4 or 8.

A fader precision of "1" equates to 128 in Pitch Bend, "2" to 256, "4" to 512, and "8" to 1024. (These numbers are, of course, usually rather meaningless, as they are only relative to the actual bend range, which can depend on the instrument or patch settings.)

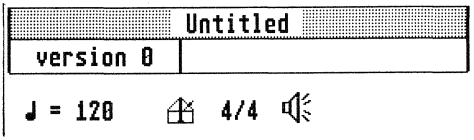
Notes:
The parameter type, Control Change number, channel/port settings for each line, graphic/numeric mode, and Fader Resolution are all saved in the .SNG file.

The Fader Bar will go away when you either KEEP in regular linear record mode or after you Clean/Semi/Rename in Cycle Record mode.

To MAKE THE FADER GO AWAY Using Key Commands:
• Press Control Shift F

Tempo

Directly below the version number you'll see a quarter note, an equal sign and a number, representing Beats Per Minute. Tempo adjustment is fairly easy: by pointing at the number itself and pressing the RIGHT or LEFT mouse buttons, you can increment or decrement the Tempo by 1 beat. By pointing at the quarter note and pressing the RIGHT or LEFT mouse buttons, you can increment or decrement the Tempo by a wider margin.



You may have noticed as you cycle through the actual tempo numbers, that some beats are not accessible. The reason for that will be covered later*, but there is a way to get finer tempo steps. Point at the = sign and press the RIGHT mouse button. The resolution of the Tempo is increased by a factor of 4, and the tempo value is displayed to 2 decimal places.

*Film Click and Ultra-Fine are described in Chapter 6 -- Global Features

To Adjust The Tempo:

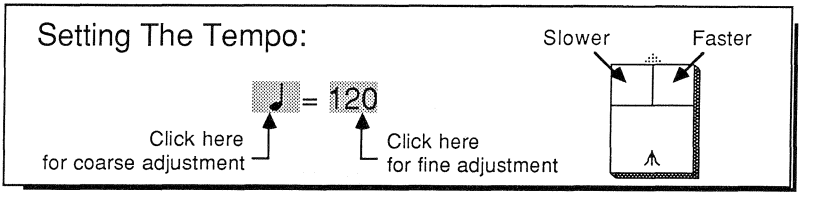
For Coarse Adjustment	• Click on the Quarter Note OR • Press Shift > or Shift <
For Fine Adjustment	• Click on the Tempo Value OR • Press > or <

- To Increase the Tempo: Click the RIGHT button OR Press the > key
- To Decrease the Tempo: Click the LEFT button OR Press the < key

To Set Ultra-Fine Tempo Resolution:
- Point to the = sign and click the RIGHT button

To Return To Normal Tempo Resolution:
- Point to the = sign and click the RIGHT button a second time

If you click the LEFT button on the = sign, it produces a Film Click icon (See Chapter 6). If you accidentally do this, click the LEFT button a second time while pointing at the = sign.



Metronome

The Metronome icon is directly to the right of the Tempo indicators. A speaker icon exists to control the playback of a click. You can turn it ON or OFF, and choose between Speaker Click or MIDI Metronome.

To Toggle The Metronome ON/OFF:
- Left Click on the speaker icon

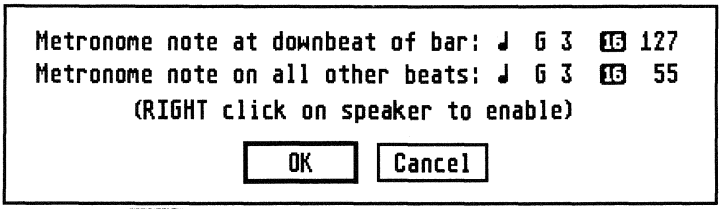
OR
- Press ' (apostrophe) on the ST keyboard

Make sure you have your monitor volume turned up to hear Speaker Click.

It is possible to create a metronome click which occurs over MIDI. The MIDI Metronome is a feature which allows you to send a MIDI Note out any channel you choose. This will be sent at the current Tempo setting which will then become your Metronome click. An example of a "good" MIDI Note might be to a drum machine hi-hat or rim shot.

Set Up (On the MIDI Menu)
The MIDI Metronome is set up choosing Metronome Notes from the MIDI menu.

To Set Up MIDI Metronome:
- Select Metronome Notes from the MIDI menu
- A dialog box appears asking you to select a Note to be the Note that will sound when the Metronome on the Control Display clicks


Metronome note at downbeat of bar: ♩ G 3 16 127
Metronome note on all other beats: ♩ G 3 16 55
(RIGHT click on speaker to enable)
OK
Cancel

In this dialog, click on the key and octave separately, left to decrement and right to increment (keys wrap to octaves). You can choose the Note, channel, port (if using MidiPlexer), and velocity for the downbeat (accented) and other beats' (unaccented) metronome ticks. You could use the same Note at different velocities, or different Notes (even on different instruments if you want to).

- Click on the quarter Note to test the currently set Note
- Click on the Note value if you want to change it
- Click on the channel setting if you want to change it
- Click on the MidiPlexer Port if you want to change it
- Click on the Velocity setting if you want to change it

To Switch Between Speaker Click & MIDI Metronome:
- Right Click on the Speaker

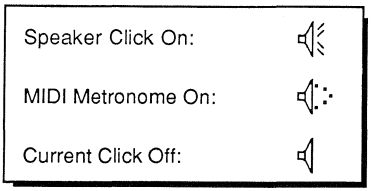
OR
- Press Control ' (apostrophe)

Speaker Metronome is indicated by "sound waves" coming out of the speaker on the Control Display. MIDI Metronome is indicated by the "pins" of a MIDI jack to the right of the speaker.

Even if the metronome is off, it always sounds during Countoff.

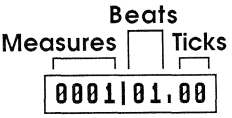
Note:
If using an instrument other than a drum machine for your MIDI Metronome, be sure to use a patch or sample designed to be triggered for an extremely short duration. Sounds which take a moment to build up in volume may not be audible when used for Metronome Notes.

Metronome Notes are stored in the User Preferences file (see Chapter 6). Metronome Speaker/MIDI/Off status is stored in the Song File.



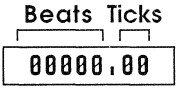
Meter & Metronome Settings

Measures Mode
Until now, all time displays have appeared in Measures Mode. It shows you time in *measures*, beats and ticks:



In this Mode, you can choose a time signature (4/4 is the default), and the metronome can be customized to click with accents where you want them. Most people prefer this is the Mode.

Beats Mode
MidiTrack ST has another form of time display, which is called Beats Mode. It shows you time in beats (quarter notes) and ticks.

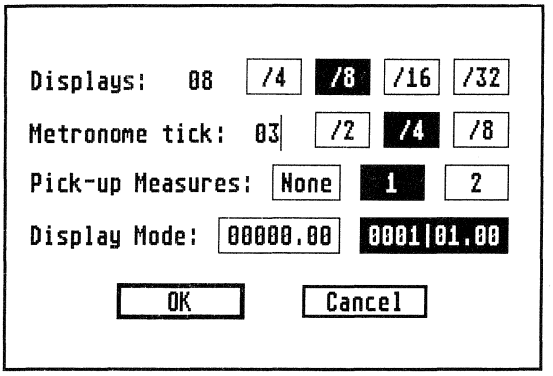


In this Mode, the Metronome always clicks at a quarter-note rate (one click per beat).

This is a Mode in which it is easier to describe some Time values (for example, the highest Time you can set in the program is 19999.95 beats and ticks, but Measures Mode display of that value will vary dependent on time signatures).

To Set METER & METRONOME Parameters:
- Shift Click or Both Click on the Meter (shown as **4/4**)

- A dialog box appears allowing you to set parameters regarding the Counter and Timing display information



Displays, Metronome tick, and Pick-up Measures Measures will only work if you are in Measures Mode (see explanation of each function on the following pages).

- Set the desired values for each of the options presented in the dialog box (See descriptions, next page)
- Click OK

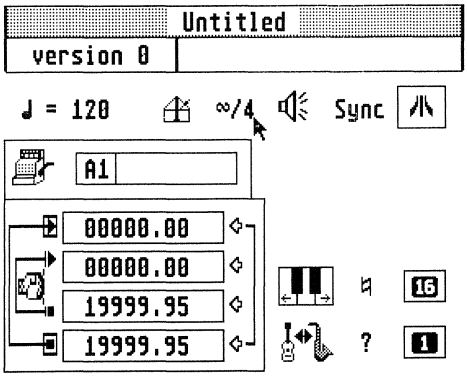
To Set The Numerator Values:
- Point at the number you want to change and click
  (Use UP/DOWN Arrows as an alternate way to move the Cursor between the different values)
- Type in a value between 1 and 60 (use Backspace or Esc keys if necessary)

To set the denominators, click on the desired box.

Displays:		
Beats Mode	=	**∞/4**
Measures Mode		**User Defined**

This is a time signature which affects all displayed time values and which is also displayed on the main screen. The first number (which is entered using the keyboard) is the numerator which has a range of 1 to 60. The denominator is selected by clicking on one of the 4 buttons.

When in Beats Mode, the display shows infinity over 4. If you switch from Beats Mode to Measures Mode, the Display Time Signature **numerator** defaults to **4**.



Metronome Tick:	
Beats Mode	**1 Tick per beat**
Measures Mode	**User Defined**

This is a separate "time signature" for the metronome, used to set an accented clicking rhythm. It can be set independently from the Display time signature, but in some cases it interacts with the Display time signature in determining the metronome rhythm pattern.

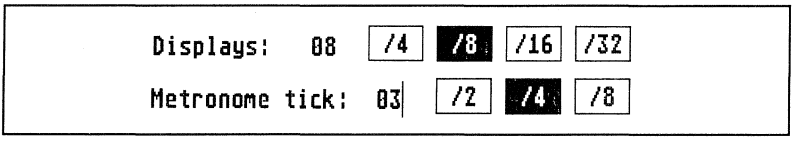
The denominator (selected by clicking on one of the 3 buttons) is the note value for the metronome click. For example, if you click on **/8**, you will hear a metronome click every eighth note.

The numerator (entered from the keyboard) is used to determine how often an accent will occur. For example, if you set Metronome to **4/8**, and Display also to **4/8**, you will hear:

1	2	3	4	5	6	7	8
TOCK	tick	tick	tick	TOCK	tick	tick	tick
TOCK	tick	tick	tick	TOCK	tick	tick	tick
TOCK	tick	tick	tick	TOCK	tick	tick	tick

However, the metronome will always restart its count (and accent) when the display starts a new measure. For example, if you set Display for **8/8** and Metronome tick to **3/8**, you will hear:

1	2	3	4	5	6	7	8
TOCK	tick	tick	TOCK	tick	tick	TOCK	tick
TOCK	tick	tick	TOCK	tick	tick	TOCK	tick
TOCK	tick	tick	TOCK	tick	tick	TOCK	tick

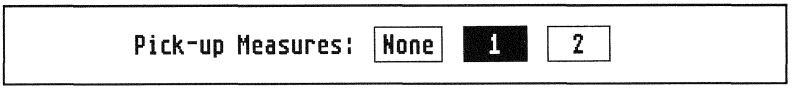


Pick-up Measures:	
Beats Mode	**Not Shown**
Measures Mode	**1 or 2 measures**

Pick-up is a space of time before the music starts playing.

MidiTrack ST allows you to ***renumber*** the first 1 or 2 measures as Pick-up measures. ***Since this is only a renumbering***, you can still record and play back during these measures.

If you select one Pick-up measure, the first measure is shown as **. . . 1** and the second (presumably the first measure of music) as **0001**. If you use two Pick-up measures, the first is **. . . 1** and the second is **. . . 2**.

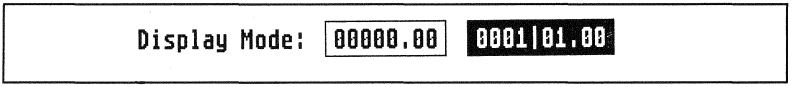


Notes:
You can skip a Pick-up by setting the Start Time to 0001|01.00 and activating Auto-Locate. *Setting Pick-up Measures to* None *will not remove time from the beginning of your piece*. (see Chapter 5 Remove Time -- Edit menu)

Use Pick-up measures only if you want extra measures before measure 0001 permanently, or if you need to record during the pick-up. To have the Metronome click before measure 0001 while recording, use the Countoff.

Display Mode:

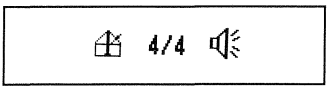
The left choice is Beats Mode. The right is Measures Mode.



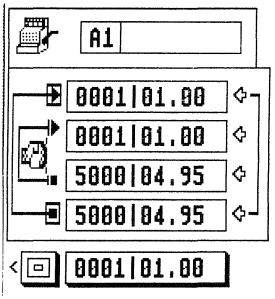
Measures Mode is shown selected. Once a Mode is selected and you click OK, all applicable settings are put into affect.

Using Measures Mode

If you choose to use Measures Mode, ALL counters will display as Measures | Beats.Ticks, and they will adhere to the basic meter settings.



A meaningful time signature is displayed to the right of metronome on the main screen.



Measures Mode changes the way time is displayed but does not change any previously-recorded information. If your preference is to work with beats as opposed to measure references, then click on **00000.00** (Beats Mode). If you find it easier working with a visual representation of Measures and Beats, it's available to you as well by selecting **0001|01.00** instead.

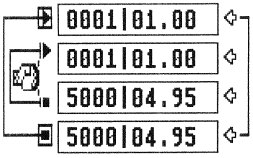
Mode Display Values:

Beats Mode	Lowest Value =	**00000.00**	
	Highest Value =	**19999.95**	
Measures Mode	Lowest Value =	**0001|01.00**	(no Pick-up)
	Pick-up display	**...1|01.00**	
	Highest Value =	**5000|04.95**	(in **4/4**, no Pick-up)
	Highest Value =	**10000|04.47**	(in **4/8**, no Pick-up)

Since there is only room to display a 4-digit measure number, any value over 9999 is shown as +++0. The purpose of having values that high is to be able to set the Punch-Out or End times to values you'll probably never reach, so it's not important if you can't see the exact value.

Auto-Locating

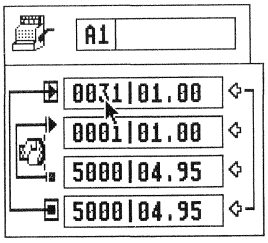
When dealing with analog tape recorders, there is always a significant lag between the time you Stop the tape deck, rewind it to the beginning (or an earlier point on tape), and press the Play button to listen to what's recorded. Not so with MidiTrack ST. Auto-locating is a method of instantaneous location to any moment of time. (There is a limit: 20,000 beats of music, or 5,000 bars of 4/4 time, but not many compostions will go that long).



The top number is the Start Time. The bottom number is the End Time. Directly to the left of these times, there is a connecting line. By pointing to anywhere on the connecting line and clicking, the Start and End times are activated (you'll see the two arrows to the right of these counters "light up" to indicate they are active).

To Set The Start Time:

- Point with the mouse at the numbers within the Start Time
- Use the RIGHT button to increment any digit
- Use the LEFT button to decrement any digit
- Change the Start Time to any beat/tick

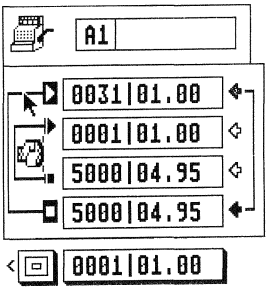


For example, if you wanted to start at beat 30, point to the Start Time and click on the second number left of the decimal with the RIGHT button until it reads 00030.00.

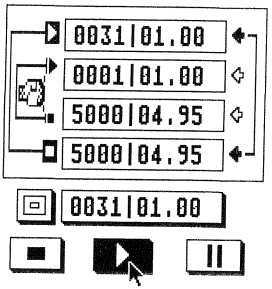
With precise pointing, you can increment and decrement by 10's, 100's, 1,000's or 10,000's or by individual ticks as well. Point to the column you wish to increase or decrease and click the appropriate mouse button.

Once you have set the Start Time AND activated Auto-Locate, the Start Time becomes the point at which MidiTrack ST starts playing. There is an extremely slight lag between the time you press PLAY and the time MidiTrack ST locates to the beat you've selected, whether the beat is 20 or 220 or 2,020.

Enable
Auto-Locate



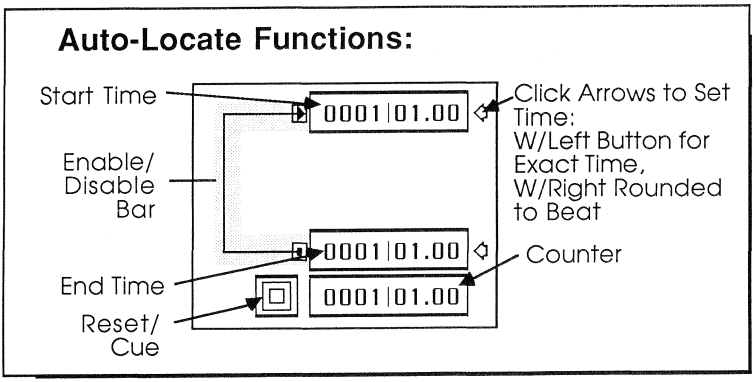
Sequence
Starts From
Start Time



You can also set a Start Time "on the fly". If you point to the small arrow to the right of the Start Time and click as MidiTrack ST is running, whatever time is displayed in the Counter will be automatically stored in the Start Time. By clicking the LEFT button, it will be the exact time to 96 ticks as displayed in the Counter; if you click the RIGHT button it will be rounded off to the nearest value set by the Rounding Amount Command.

Every action described above is also applicable to the End Time. Although this Time is usually left at the highest possible number (it defaults to 19999.95), by setting it to another number greater than the Start Time, you can play back a given portion of a piece. In other words, the End Time signals the computer to Stop playing, just as the Start Time tells it where to begin playing.

To deactivate the auto-locate feature, click on either of the two auto-locate icons or the connecting line to the left of the Start/End Times. The arrows to the right of the Times will become empty, signifying that the auto-locate function is disabled. Thus when you start MidiTrack ST again it will begin at 00000.00.



To ENABLE AUTO-LOCATE:
- Click on the Enable/Disable Bar (or Press * on the ST numeric keypad)

To DISABLE AUTO-LOCATE:
- Click on the Enable/Disable Bar again (or Press * a second time)

TO SET START or END TIMES:
- Point to the numeric column you wish to adjust
- Use the RIGHT button to increment the number
- Use the LEFT to decrement

TO SET START or END TIMES "ON THE FLY":
- Click on PLAY to start the sequencer
- Point to the arrow to the right of the counters
- Click LEFT to enter the exact time as it reads on the Counter
- Click RIGHT to enter the Counter number rounded off to the nearest beat

You can "Cue up" to the Start Time without automatically beginning to play. Set the Start Time and press Control SPACE BAR, or click on the Counter Reset button. MidiTrack ST will locate to that point (you'll see the master counter change to that time) and play/freeze on that beat but won't continue playing until you click the PAUSE icon, or the TAB key.

When the Start Time is active and the Counter is Reset, the Counter will auto-locate to the Start Time. In other words, if the AUTO-LOCATE function is ENABLED, then whatever time is set as the Start Time also becomes the reset value for the Counter.

Note:
Whenever you Locate to some point past the beginning of the song, Patch Changes, Pitch Bend, and all Control Changes are "chased". That is, the program scans through the tracks and finds the latest setting for each of these parameters before the Start Time, and sends out these settings before commencing playback. This way all these parameters are set correctly no matter what point in the song you start playing.

Overdubs

This is a fairly simple procedure, but is mentioned here as it is an important factor of analog recording, and there should be no confusion as to how this is achieved using MidiTrack ST.

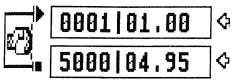
MidiTrack ST is always in Record mode, but also plays back every track (provided, of course, they are not muted) whenever it is put into Play. This means that whenever you click on the PLAY/RECORD button, you will always hear your previously recorded tracks. As you are also in Record mode while you're hearing these tracks, this also means you can OVERDUB whenever you want to simply by playing the next part as MidiTrack ST is running.

As soon as you've completed the overdubbed part to your satisfaction, select a track to assign it to and Left Click on the KEEP button to store it on a track. Or just Right Click on KEEP and have the program select an empty track for you.

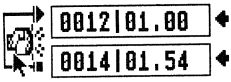
You can continue overdubbing as much as you want, simply storing each successive overdub to another track each time you've finished.

Punch-In / Punch-Out

Often, you'll find a need to correct a section in the middle of a track, either erasing it fully or replacing notes. MidiTrack ST allows you to set two specific times in a track between which the sequencer will automatically re-record and replace the MIDI information with new data.

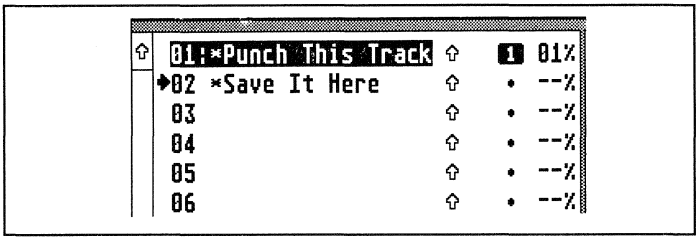


Punching in and out of a track is fully automated to allow you to concentrate on your performance rather than the Punch. MidiTrack ST allows you to set your In and Out punch points in advance, start the recorder running, and put you in and take you out of record at just the right moments.



Pictured are the two times related to Punching. The top is the Punch-In Time, and the bottom is the Punch-Out Time. By clicking on the Punching Glove, punch "impact marks" indicate the Punch times are activated.

Select a track to Punch. You'll need to activate Punch BEFORE you choose a track. When you select a track to Punch, that track will become reverse highlighted. You can only Punch on one track at a time, so you will always have only one track reverse highlighted.



To Set The Punch-In Time:
- Point the mouse at the numbers within the Punch-In Time
- Use the RIGHT button to increment a digit
- Use the LEFT button to decrement a digit
- Change the Punch-In Time to any beat/tick

If you want to Punch-In at beat 40, click on the 10's column digit with the RIGHT button until it reads 00040.00 If you are precise in your pointing, you can increment/decrement by 10's, 100's, 1,000's or 10,000's or by individual ticks as well. Point to the column you wish to increase or decrease and click the appropriate mouse button.

Punch-Out times are set the exact same way as Punch-In Times. The Punch-Out Time must be greater than the Punch-In Time, but if you inadvertently make it smaller, when MidiTrack ST begins playing it will change this to the same time as the Punch-In time. Although nothing will occur, you won't lose any track information either. If this happens, reset the Punch-Out Time and start Play again.

You can also insert a timing location into the Punch counters "on the fly", as you do with the Auto-Locate function. As MidiTrack ST operations are all done in real time, if you point to the small arrow to the right of either Punch Time and click the mouse button as MidiTrack ST is running, whatever time is displayed in the Counter will be automatically stored in the Punch Time. By pressing with the LEFT mouse button, it will be the exact time to 96 ticks; if you press with the RIGHT button it will be rounded off to the nearest beat. This makes marking punch points very easy, as you can note the In and Out locations while you're listening to the track.

MidiTrack ST also automatically turns Notes (and Hold Pedal) Off when it punches in the middle of a sustained note, so you don't have to worry about finding the precise Out point just after a note is ended. (This may cause some clipping, just as it does on analog recorders; however this can be easily repaired using MidiTrack ST's advanced editing features, unlike on an analog tape deck.)

To deactivate Punch, point the mouse at the Punching Glove and click. The arrows to the right of the counters will become empty and the glove will return to normal, signifying that Punch is disabled.

Because Punching is a recording process, **the information is stored in the Record Buffer and requires that you assign it to a track when you're finished**. This means that your original track is always safe from any punches you may attempt, providing that you place the music you've just punched to another track location. This is another example of non-destructive editing: you can run the same punch over and over again without fear of losing your original music, and when you're satisfied, store it on another track.

Note:
While Punch is enabled, you can only click *to the left* of the track number when Selecting a Track for saving.

Early Amount (Options menu) affects the amount of time before the Punch-In Time that the program actually starts recording. Punch Method lets you defeat the automatic turning OFF of Notes and Hold Pedal at the Punch Points. See chapter 6 for details on Early Amount and Punch Method.

To Enable Punch-In/PUNCH-OUT:
- Click on the Punching Glove (or press / in the upper right corner of the numeric keypad)

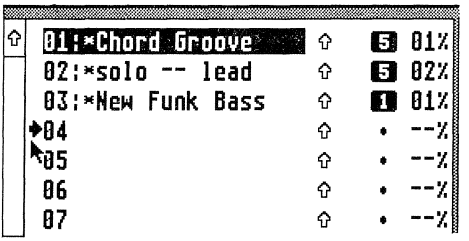
To Disable PUNCH-IN/PUNCH-OUT:
- Click on the Active Punching Glove (or press / a second time)

To Set PUNCH-IN and/or PUNCH-OUT TIMES On The Fly:
- Click on PLAY to start the sequencer
- Point to the arrow to the right of the counters
- Click the LEFT mouse button to enter the exact Counter time
- Click the RIGHT button to enter the Counter time rounded to the nearest beat

To Punch A Track:
- Make sure you can see the Cash Register icon before you begin
- Set the Punch-In Time
- Set the Punch-Out Time
- Enable Punch Mode
- Optionally set the Start and End Auto-Locate Times and Enable Auto-Locate
- Click in the Track Name area of the track you want to punch This becomes the Punch Source Track

- Click on PLAY
- The KEEP button highlights and the sequence starts playing
- As the sequence plays, the information from the Punch Source Track is copied into the KEEP Buffer
- Any information in the KEEP Buffer that was previously on the Punch Source Track between the Punch-In and Punch-Out Times is erased. If anything is played between these two times, it is recorded in real time as it is played.
- When you are finished, click on STOP

- Click to the left of the track number to select a Punch Destination Track



- If you select the same track as the track you Punched on, the information previously on that track will be replaced with the new information.
- If you selected a different track, make sure to turn off the Punch Source Track to hear the new edit
- Click on KEEP to save the information in the KEEP Buffer

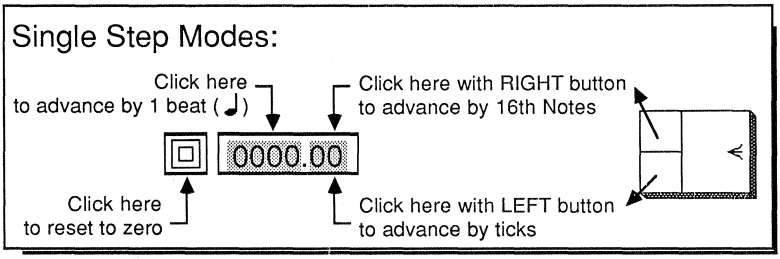
Notes For Punch-In/Punch-Out

- *To be able to KEEP the punched result, you must either wait for the counter to pass the Punch-Out Time, or press STOP (or PAUSE).*
- *After you KEEP a punched result, the Punch feature is automatically deactivated. If you want to do another punch right away, you will need to re-enable Punch.*
- *Once you PLAY or Locate, you cannot select a different track to Punch-In on, unless you deactivate and reactivate Punch (by clicking twice on the Punching Glove).*
- *Punch can also be used to erase a section of a track, without recording any new information; the only restriction is that the Punch-In Time must be set past the zero Counter setting (ie., 00000.01 or greater).*

Step Recording

Another method of recording called STEP Recording is available. This means you record your music in non-real-time. You control the advancement of the beat or fractions of a beat directly. One quarter-note beat is equal to 96 ticks (the numbers to the right of the decimal point).

Step Recording is tedious work, but useful in a variety of applications (tight drum rolls for instance). As MidiTrack ST is alway in record mode when playing, the master Counter can also be used to Step through a recording.

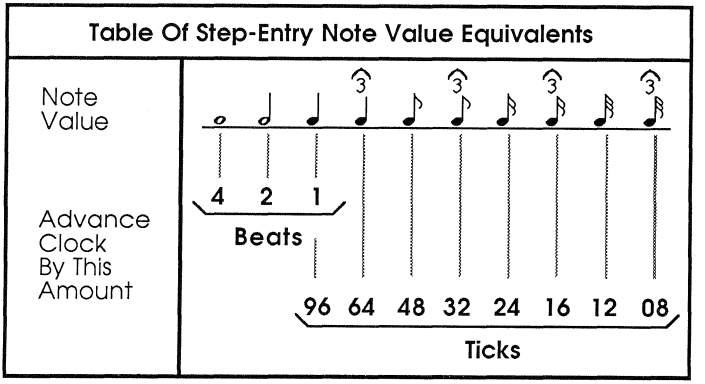


You can also control Counter advancement from the ST keyboard:
The / key advances by 24 ticks (16th notes)
Control Tab advances by individual ticks
Shift Tab advances beat by beat

As you advance the counter, play a note and hold it down as long as your music dictates. If you're going to play a quarter note and you're advancing the counter by 16th notes, you'll have to hold the instrument's key down for 4 movements of the counter (four 16ths = one Quarter note). This gives you very precise control over what you're entering, although its usefulness is limited.

Note:
You will hear music on tracks play as you slowly advance through the piece. By noting when the notes occur you can quickly and precisely Punch In and Out to make corrections.

If you have the Quantized Record (see Chapter 5) value set to something other than NQ or 16, pressing / or Right Clicking after the decimal advances by the note length selected by the Quantized Record setting.



Silent Re-Cue

There are many situations where a re-cueing is performed but hearing the initial beat is not necessary nor desired. There is an on-screen indicator to the left of the Counter Reset button, a less-than symbol. When displayed, it means that a "Silent Re-Cue" is in effect, and the Counter is acting as if it's before the displayed value. When blank, it means that the Counter reflects a tick already processed (events already sent out). Once the sequence is running, this indicator is only turned Off when the next counter value is displayed, typically on the next beat.

When you are Step Recording, it is important to hear the Re-Cue beat so you know what has occurred on that exact tick value. Because of this, MidiTrack ST allows you to do what is called a "non-Silent Re-Cue".

To do a non-Silent Re-Cue, Left Click on the Counter Reset button. This will cause the less-than sign to go away (indicating that your Counter Time now represents the time just played).

To do a Silent Re-Cue, Right Click on the Counter Reset button. The less-than sign will appear (indicating that your Counter Time has not yet been processed).

To do a non-Silent Re-Cue From The ST Keyboard:
• Press Control Space Bar

To do a Silent Re-Cue From The ST Keyboard:
• Press Shift Space Bar

FILE MANAGEMENT

Song files can be stored on the standard 3.5" disks your Atari ST uses or on any compatible hard drive. We recommend Hybrid Arts HDX HARDRIVES. Saving and recalling songs and even portions of song files are relatively simple operations.

Anytime you access the Item Selector, the function being performed is described along the top margin (temporarily replacing the menu bar).

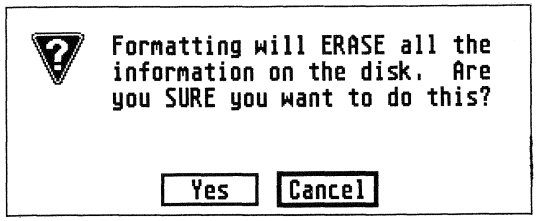
Formatting A Disk

When a disk is fresh out of a box, it needs to be formatted. Different computer manufacturers use different operating systems, so disks formatted on one brand of computer won't be able to be used on another type. (Note: it is not a good idea to reformat a non-Atari disk to Atari format as it may not remain reliable.)

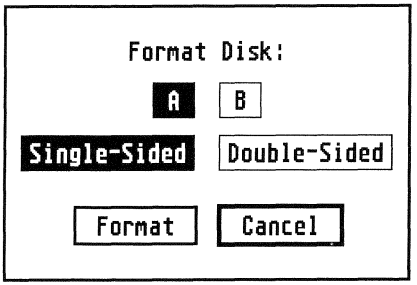
Before saving song files, you'll need to format a disk. If you already have a formatted disk, there's no need to reformat it; especially since when you format, ***it erases all the information you have stored on a disk.***

To FORMAT A Disk (From Within MidiTrack ST):

- Select Format Disk from the File menu
- A dialog box appears, warning you that formatting will erase all the information on a disk and verifying you want to do this
- Click on the YES box to continue.



- Place a blank 3.5" disk in the drive
- If you have two drives, choose which one you use
- Another dialog box appears, asking you which drive and format (single sided, which gives you approximately 360K worth of disk space or double sided, bringing available disk space to 720K) you care to use
- Choices are inverse and can be changed by clicking on the options
- Once you're ready to format the disk, click on the Format box.



As the disk formats you'll see the drive light come on and hear a whirring sound. This will continue until disk formatting is complete.

Saving Song Files

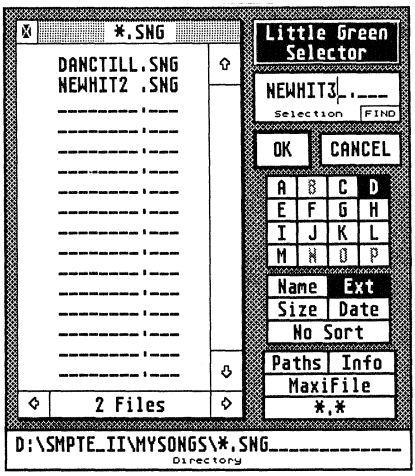
All the MIDI information you have recorded along with any options you've set are stored in the song file. This means Tempo settings, MIDI channel assignments and any other information particular to the setup of the music you're saving will be included in the saved file. (A few options are saved in the User Preferences file rather than the song file. See Chapter 6.)

There are two options you have when saving a song file. The Master Disk comes with a File Selector called "LGSELECT" and it can be found in the **AUTO** folder (*full* instructions for using it are in the file **LGSELECT.TXT**).

If you BOOT with the Master Disk (or install **LGSELECT.PRG** in the **AUTO** Folder of your Hard Disk), then whenever you save a Song File, the Little Green Selector will appear.

To SAVE A Song File (Using Little Green File Selector):

- Select Save SNG/MID File from the File menu using the Left button (or press Aternate S)
- Type in a name for the file you want to save. This can be any 8 character name, providing you follow the normal file naming rules contained in your Atari Users manual. The **.SNG** extension will automatically be added to the file. **DON'T TYPE ANYTHING AS AN EXTENSION (3 CHARACTERS AFTER THE PERIOD)** UNLESS YOU FULLY UNDERSTAND HOW TO USE THE ITEM SELECTOR BOX.
- When you're ready to save it, click OK (or press Return)

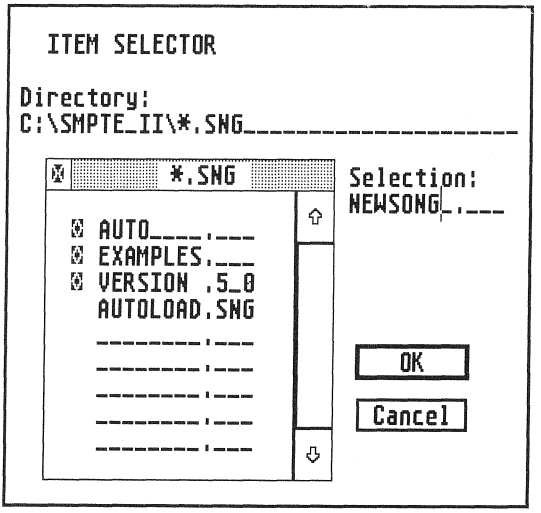


Complete information about the Little Green Selector is in the LGSELECT.TXT file on your Master Disk. From the desktop, double-click on this file and then click Show to view it on the screen (or Print to print it).

To SAVE A Song File (Using the Atari File Selector):

- Select Save SNG/MID File from the File menu using the Left button (or press Aternate S)
- A window will appear, prompting you to type in a name for the file you want to save. This can be any 8 character name, providing you follow the normal file naming rules contained in your Atari Users manual. The **.SNG** extension will automatically be added to the file. **DON'T TYPE ANYTHING AS AN EXTENSION (3 CHARACTERS AFTER THE PERIOD)** UNLESS YOU FULLY UNDERSTAND HOW TO USE THE ITEM SELECTOR BOX.
- When you're ready to save it, click OK or press Return

Note:
When you save a song a second time using the Save As option, you'll notice the previous name is automatically entered in the selection box from the last time you saved the file. This makes it easy if you want to save it under the same name. If you want to save the song as a different filename, press Backspace or ESC (Escape) first to clear the previous name. Practice typing a different name using a test song to see what happens. Understanding this process can save frustation later knowing the file is saved correctly.



< Enter your song file name under the word **Selection**.

DO NOT ENTER YOUR SONG FILE NAME UNDER THE DIRECTORY LINE; THIS IS RESERVED FOR OTHER ITEMS.

Update

Once you've saved a file, there is a shortcut way to update it. This speeds up the process of regularly saving your work as you are writing and developing it, a good idea in every case. ***The Update function only becomes available after you've saved a file until you Load a new file or Erase the Song.*** This is set up so you can't inadvertently alter or save to the wrong file.

When working on important material (usually most of the time), it is *recommended* that you Update your Song every 10 minutes or so. A single power failure could ruin your entire session!

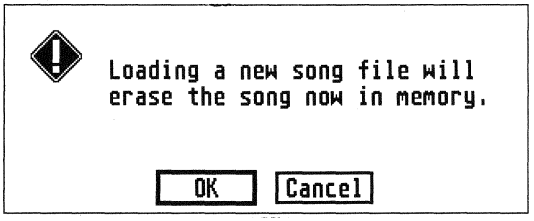
To UPDATE A Song File:
- Select Update from the File menu (or press Alternate U)

Your work will automatically be updated in the same file, without you having to go through the process of naming it or clicking on its already existent name. Updating is purely a shortcut that saves a few mouse moves for you, and lets you easily update the information in a previously saved file.

Loading Song Files

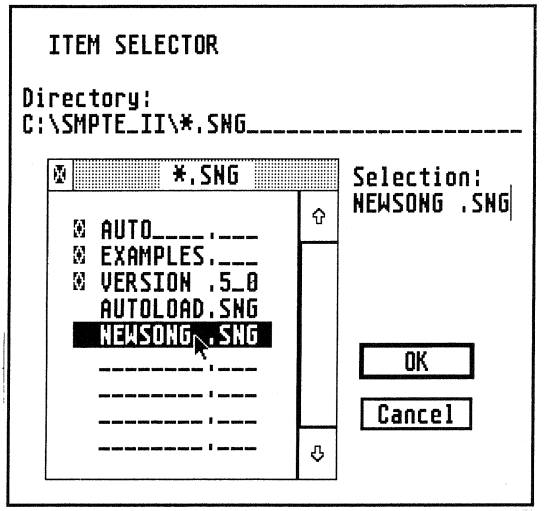
You can recall any **.SNG** file from disk in much the same way as you save it.

To LOAD A Song File (using the Atari File Selector):
- Select Load SNG/MID File from the File menu using the Left button (or press Alternate L)
- A dialog box will appear, warning you that when you load in a new song file, you will be erasing the song now in memory



- If you want to save the current file to disk, click Cancel and save it
- Otherwise, click OK (or press Return) to continue

An Item Selector box appears with a menu of the **.SNG** files on the disk that you can load.



- Click on the song name you want to load
- The name will be transferred to the Selection line
- If necessary, scroll through the window by clicking on the arrows to the right of the small window
- Once you have selected the file you want to load, click OK
- The disk drive will whirr for a few seconds and the song file will be loaded in memory.

Note:
Songs saved with eariler versions of MidiTrack ST, the original EZ-Track, and EZ-Track Plus can be loaded into this and future versions of MidiTrack ST. Songs files created with this version of MidiTrack ST can be loaded into EZ-Track Plus *if they don't have special track types (Chains, Tempo, Meter, etc.) and only use the first 20 tracks.*

Song files created with this version of MidiTrack ST can be loaded into previous versions of MidiTrack ST (back to version 01/03/89).

In some situations, you may have a song that does not have an extention of **.SNG** (for example, a backup version has an extention of **.SBK**). In this case, you will have to "change the path" of the Directory. In most cases within MidiTrack ST, the default directory appears as **A:*.SNG** when you access the item selector. Let's analyze a sample filespec:

A:\SONGS*.*

Part	What It Means
A:	The drive you are accessing. In this case, the A Drive. If you do not speicify a Drive, the program looks for the file on the same Drive that the program was loaded from.
\	Because this follows the Drive identifier, anything following this backslash should be found in the Root Directory.
SONGS	This is the name of a folder on Drive A.
\	Each folder name is followed by a backslash.
.	These are called "WILD CARDS". A filename consists of 8 characters before the dot and 3 characters after it. ***.*** tells the computer to show filenames with anything before and after the dot. ***.SNG*** tells the computer to show filenames with anything before the dot and SNG after the dot.

To Load Any Song File (using the Little Green File Selector):
- Insert the disk containing the backup version of the Song File
- Select Load SNG/MID File from the File menu using the Left button (or press Aternate L)
- Click on the Wild Card Selector (*.*) in the lower right
- All files on the currently selected disk should be seen
- To change disk drives, click on the desired drive letter (A-P)
- Click on the file you want to load
- Click OK

To Load Any Song File (using the Atari File Selector):
- Insert the disk containing the backup version of the Song File
- Select Load SNG/MID File from the File menu using the Left button (or press Aternate L)
- Click on the Directory Line to move the cursor from the Selection Line
- Type the Esc key to erase the path definition
- Type the path you wish to see (as described in the example above)
- Click anywhere on the scroll bar (this updates the listing)
- Click on the file you want to load
- Click OK

It is good to mention that doing this would allow you to attempt to load a file which is not a MidiTrack ST song file. The program will inform you by saying "Song not loaded sucessfully". (Keep in mind, another reason that you could get this dialog box is when the song file is actually damaged.)

Build/Perform Set

"Now that you have a disk full of hit songs, you're ready to go out and play for the world." When you start your set, you realize that you don't have any time to talk to the audience because you're too busy loading the next song from disk.

The Set functions (Build/Perform) will help you with this little dilemma. It gives you the ability to specify up to 48 songs to load and play, automatically.

To Build A Set:

- Select Build Set from the File menu
- Select the first song (SNG) file in your set
  (Select song files in the order you want them to play)
- Click OK
- After you select each one, a dialog box asks you how many seconds you want to wait before playing that song (this does not include the amount of time it takes to load the song file or play the previous song)
- Type in the number of seconds you want it to wait before PLAYing
- Click OK
- Select the next song in your set
- Repeat this until you have selected all of the songs in your set
- When you are finished, click CANCEL
- Choose whether the Set should play once, or repeat endlessly
- Save the **.SET** file (8 character name with a **.SET** extension)
- A BACKUP FILE IS NOT CREATED IF YOU OVERWRITE AN EXISTING **.SET** FILE!!

If after you start to Build a SET, you decide you don't want to build one, click CANCEL two times -- once to get you out of picking songs, and again to get you out of Build Set.

To BUILD SET Using Key Commands:

- Press Alternate B

To Perform A Set:
- Select Perform Set from the File menu
- Select a **.SET** file
- Click OK
- The first song in the set will load and play

If you did not define a delay for this song (0000 seconds), it will begin to play immediately. Otherwise, it will wait the number of seconds you specified. It is possible to abort the delay by pressing any key or mouse button, at which point the song will start to play.

Playback will continue until stopped -- either manually (click Stop or Pause) or when the End Time is reached if the song was saved with Locate enabled. The moment the sequencer detects that the song has stopped, it will load the next song in the set.

To Stop The Set:
- Select Perform Set from the File menu
- Click Cancel in the file selector

To PERFORM SET Using Key Commands:
- Press Alternate P

Partial Table of Delay Times
- 60 minutes = 3600 seconds
- 30 minutes = 1800 seconds
- 10 minutes = 600 seconds

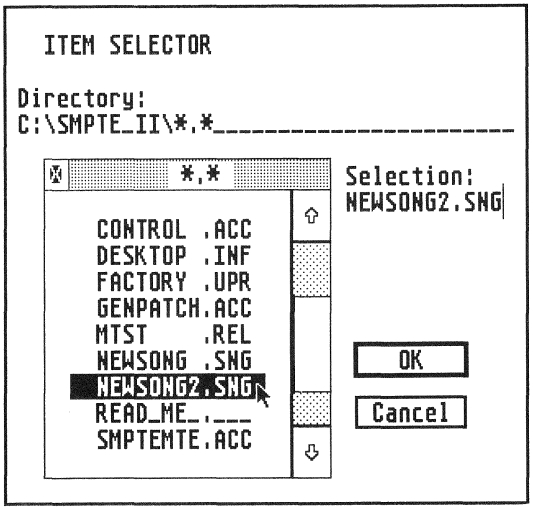
Example for Endless Set (with delay calculation)
Let's say you want to play a song exactly every ten minutes:
- The song takes 15 seconds to load and 1 minute (60 sec) to play
- Select Build Set from File menu and pick that song
- Calculate seconds to wait before playing: 600-60-15 = 525
- Click OK after typing Delay
- Click Cancel to exit
- Choose Endless, and save the Set
- Perform the Set (hit any key to start song the first time)

Deleting Files

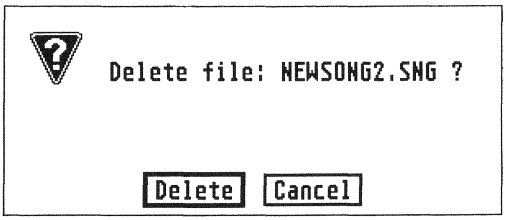
You can delete any file you want from a disk, including files with other than an **.SNG** extension. A good example of when to use this is if you don't have any blank disks handy, and the disk you have been using to save your work is now full. By deleting old versions of songs, backup files (with an extension of **.SBK**), or unneeded files, you can create room on the current disk for saving your song file.

To DELETE A File:

- Select Delete from the File menu (or press Aternate D)
- A window appears with a menu of all files on the current disk
- Click on the file you want to delete



- The name transfers to the Selection line
- If necessary, scroll through the window by clicking on the arrows to the right of the small window
- Select the file you want to delete
- Click OK
- A warning dialog box will appear, verifying your desire to delete the selected file
- If you are satisfied with your selection, click Delete
- The disk drive will whirr for a few seconds and the selected file will be permanently deleted from the disk



CHAPTER 4
MUSIC PROCESSING

In This Chapter:

- Selecting Tracks To Edit
- Editing Features:
  - Whole / Region Editing
  - Quantize
  - Humanize
  - Durate
  - Transpose Track
- Track Management:
  - Copy Track
  - Swap Track
  - Shadow Track
  - Instant Shadow
  - Mix Tracks
  - eXtract Channel
  - Unmix Channels
  - ZoneSplit Track
  - KeySplit Track
  - Track Offset
  - Real-Time Track Transpose
  - Import Track

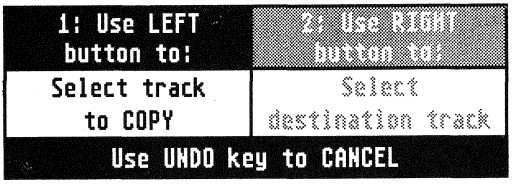
Key Words:

- Attack
- Duration
- Humanize
- Mix
- Quantize
- Unmix

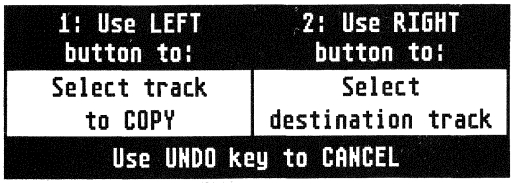
SELECTING TRACKS TO EDIT

Most of the Edit Menu functions work the same way. That is, they all need some sort of initial track to perform the edit on, then a destination track or where the information will be stored needs to be selected. This function of selecting tracks is done when the following two prompt boxes are displayed (the boxes for Copy Track are used as an example):

Click with the LEFT button to select the original track:



Click with the RIGHT button to select the destination track:



When you see these prompts, moving the mouse up and down moves the Track Pointer (it scrolls the track display if you try to move beyond the displayed range of tracks). Moving the mouse left and right while in this mode has no effect.

To select the initial track, Click with the LEFT button. To select the DESTINATION Track, click with the RIGHT button. The following table shows all of the functions that use this type of dialog box request:

Function Found Here	Select Track(s) To...	
File Menu	Import	Selecting this function first asks you to load a previously recorded song to load temporarily into memory. ***This will not erase the song currently in memory.*** Pick a track to import then select which track on the current song to save it on.
Edit Menu	Copy	Pick one track to copy to another.
	Swap	Pick one track. Pick a second track. All information associated with each track is swapped.
	Shadow	Similar to Copy but uses no extra memory. Pick a source track to shadow; the destination track becomes a shadow of the source track.
	Mix	Pick up to 60 different tracks to mix together and save to 1 track.
	eXtract Channel	Pick a track to extract a channel from and save the edit to another.
	Unmix Channels	Pick a track with multiple channels on it. Pick a starting destination track. From there it will automatically unmix all channels from the track.
	ZoneSplit Track	Pick a track to pull out a zone between two note values and save the zone on another track.
	KeySplit Track	Pick a Track which has more than one note value on it. Pick a starting track to create a separate track for each note value.

Function Found Here	Select Track(s) To...
Edit Menu	
Flatten Chain	Pick an existing Chain Track, then pick an empty track to save the flattened information.
Insert/Remove Time	Inserts if selected from menu with Left button, Removes if selected with Right. Pick a track to Insert into/Remove from and save the edit to another.
Glue In Section	Pick a track to Glue the current Section into and save the edit to another track.
Alter Timespan	Pick a track to affect the timing on the track. Pick a track to save the edit.
Quantize	Pick a track to time adjust and save the edit to another.
Humanize	Pick a track to "random" time adjust and save the edit to another.
Durate	Pick a track to time/length adjust Note Events and save the edit to another.
Transpose	Pick a track to transpose and save the edit to another.
Velocity Adjust	Pick a track to adjust its velocity and save the edit to another.
Replace Every	Pick a track to replace controller events on and save the edit to another.
Eliminate Every	Pick a track to erase controller events on and save the edit to another.
Optimize Every	Pick a Track to thin controller events on and save the edit to another.
Level Hold Pedal	Pick a track which has Hold Pedal on it. Pick a track to save the edit.

Function Found Here	Select Track(s) To...	
Inspect Menu	Graphic Edit	Pick an empty or existing track to edit graphically, then save your edits.
	Text Edit	Pick an empty or existing track to edit by event, then save your edits.
	Chain	Pick an empty or existing Chain Track, create or edit the chain, then save the Chain Track.
	Tempo Track	Pick an empty or existing Tempo Track, create or edit the Tempo Page, then save the Tempo Track.
	Meter Track	Pick an empty or existing Meter track, create or edit the Meter Page, then save the Meter Track.

Notes:
Anytime any one of the above prompt boxes are displayed, you can UNDO the function by pressing the UNDO key. This is a good safety precaution. This can also be used to inspect a track without making any changes.

You may pick an existing track or an empty track as the Destination Track. If you pick an existing track, the information on that track is deleted and the new edited information is then stored.

Using The ST Keyboard

All of the functions described above can also be accessed using the Atari ST keyboard. Use the proper key command to initiate the function, then use the following keys to move around and select tracks.

To...	Press This Key:
Move Up 1 track	UP ARROW
Move Down 1 track	DOWN ARROW
Move to a specific track	1 through 0, Shift 1 through Shift 0
Move to a group of tracks	F1 through F5
Find Group with Track Pointer	F6
Select a track (same as LEFT button)	Insert
Select a destination track (same as RIGHT button)	ClrHome
Select Next Empty Track	Help

EDITING FEATURES

In addition to standard recording techniques as decribed in the previous sections, there are many methods of working with and manipulating music once you've got it assigned to tracks. Because all of the music you've recorded is stored within the computer as a series of numbers, the rearrangement or correction of your performance contains possibilities far beyond those offered by an analog multi-track system.

Music processing is similar in features to those that are available on word processors, but oriented and expanded for music production. For example, cutting and pasting paragraphs or sentences are common features on word processors; in a similar fashion, MidiTrack ST allows you to cut *sections of music* and paste them elsewhere.

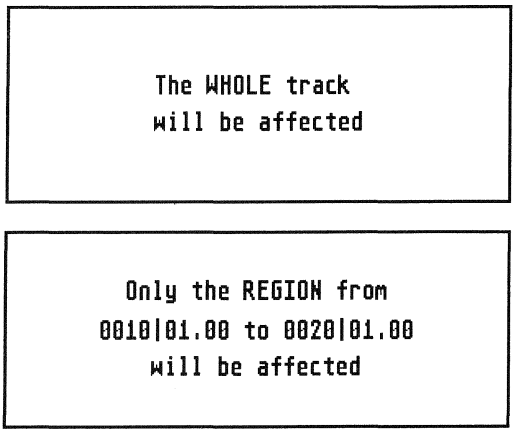
Whole / Region Editing

MidiTrack ST allows you to selectively edit parts in the middle of a track. You can define a Region of a track to edit, leaving the rest of the track unaltered.

After each of the following menu functions, you'll see a **/r** which indicates that Region Editing is available with this function:

eXtract Channel
ZoneSplit Track
Alter Timespan*
Quantize Track
Humanize Track
Durate Track
Transpose Track
Velocity Adjust*
Replace Every*
Eliminate Every*
Optimize Every*

*See Chapter 5



ZoneSplit Track can be used to Region Copy and Region Erase a track.

There are two ways to Define a Region: using the Register Start and End Times or the Punch In/Out Times. There is a bracket to the right of one of these pairs that indicates which pair of Times is the current Region Definition. Click on this bracket to toggle between Start/End and Punch In/Out being the Region Definition.

The term Region Start refers to either the Register Start Time or the Punch-In Time, depending on which Region Definition is active. Likewise, the term Region End refers to either the Register End Time or the Punch-Out Time.

To Define A REGION:
- Set the Region Start and End Times (make sure you're in Register Mode)
- Adjust the Region Start Time to the beat where you want to begin processing
- Set the Region End Time where you want it to cease
  (Note that the Region End "Time" is not included in the Region)

To Preview REGION Time Settings:
- Activate the Auto-Locate function
- Click on PLAY

To Use Region Processing:
- To have an edit function affect only the chosen Region, use the Right button to select the edit function from the menu
- For some of the edit functions, there are values that must be set first
- You will then be prompted to select a track to edit
  Notice how the message box tells you the current Region being affected

(If you want to affect the entire track, use the Left button)

To Edit A Region Using Key Commands:
- Press ClrHome. This will set up the Region mode
  Notice the little /r that appears at the far right of the menu bar
- Use the appropriate key combination to select the desired function
  The key command for each function is shown in a box similar to this one

To Edit A Whole Track Using Key Commands:
- Press Insert if the **/r** is showing at the far right of the menu bar
- Use the appropriate key combination to select the desired function

Notes For Region Time Settings

Setting Correct Time Values.....Quantize (and/or Humanize) values and the Region time settings are interdependent. If you try to Quantize (or Humanize) to quarter notes but the Region is defined from 4.35 to 8.67, you may not get the desired results because the Region is not defined exactly on quarter-note boundaries.

Event Starts Within Region.....Durate and Transpose affect ONLY notes that start (Note On) within the Region.

Quantize

Quantization takes the timing of your performance and distributes the note placement evenly across the track, based on a numeric value. The computer has recorded your original performance to a timing accuracy of 96 ticks per beat.

Not all of your notes will hit exactly on the beat; some may be a tick or two before or after the beat, some may be right on. When you quantize a track, the computer will automatically correct the timing to the nearest 16th note, or 8th or whatever you tell it. When you listen back, the performance sounds in perfect time.

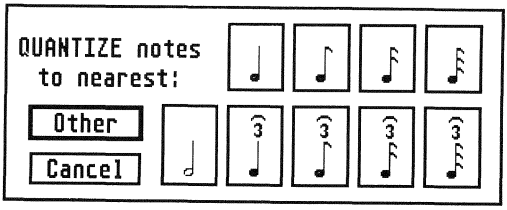
It is important to select the right quantization factor. If you played a phrase with lots of 16th notes and you asked the computer to correct the timing to the nearest quarter note, you're going to get several 16th notes rounded off to a quarter note, playing one on top of the other. This works in reverse as well: choose too high of a resolution factor and the notes may be shifted to the wrong beat or fraction within the beat, playing noticeably late or early.

Because there are 60 tracks, there is plenty of room to experiment. Saving the Quantized result to a separate track is a good way to test it without destroying the original track. If the edit isn't quite right, you can always re-quantize the original track.

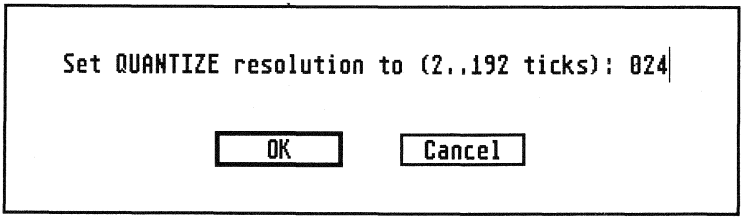
To QUANTIZE A Track:

- Select Quantize Track from the Edit menu
  Use the LEFT button to edit the Whole Track
  Use the RIGHT button to edit the current Region
- A dialog box prompts you to select the Quantize value

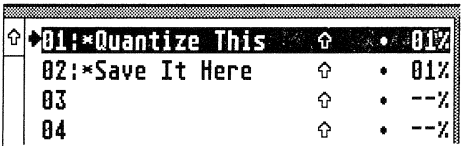
The dialog box has the 9 most-common note values to choose from:



You are not bound to just these 9 values, they are just the most common. If you want to quantize to another value, click the box marked Other. You now have the option of entering your own resolution for any beat value between a half note and a 192nd note.



- Select the track you wish to QUANTIZE with the LEFT button
- The track selected will reverse highlight



- Select a DESTINATION track
- Click the RIGHT button to save the editing

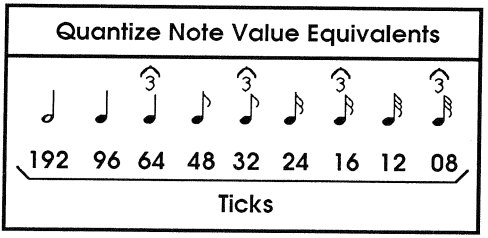
The music you quantized is now placed on the destination track. If you chose a track other than the original, you still have the first, unquantized version available.

You can QUANTIZE a track back to itself, but the orginal will be erased if you do this.

To QUANTIZE A TRACK Using Key Commands:
• Press Control Q. This will bring you to the initial dialog box.

Note:
It is possible to Quantize as you are recording using a feature called Quantized Record. That feature is described in Chapter 5 under Cycle Recording.

This table is used when you select **Other**, to equate various note values to numbers of ticks:



See Chapter 6 for information on choosing the Quantize Method.

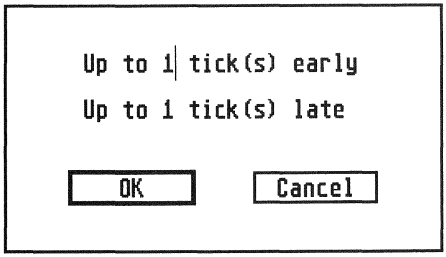
Humanize (Humanized Quantize)

A fully quantized track has a certain perfectness to it that sometimes just feels "too perfect". The "feel" is an elusive quality that live performers have over machines and has to do with creative performance, not corrected timings. However, one can still improve one's timing, and retain much of the human quality. The live feeling that one gets from a track has a lot to do with the slight imperfections of timing: not always right on the beat, but "on top of it" (slightly early) or "laid back" (slightly late). Even if you're right on the beat, you will probably vary in minute amounts with being a little bit early some times, late others and smack on the beat still others.

The HUMANIZE feature is similar to Quantize in that it automatically corrects timing, only it adds an amount of variation supplied by the user. This ends up randomly placing each note ***near*** the Quantize value. It will vary note placement randomly by plus and/or minus a specified number of ticks (up to 9 either side).

To HUMANIZE A Track:

- Select Humanize Track from the Edit menu
  Use the LEFT button to edit the Whole Track
  Use the RIGHT button to edit the current Region
- A dialog box prompts you to select a Quantize value
- Set the Humanize Random Factor



To change either number in the dialog box, click on the number to select it, then type a new value between 0 and 9.

- Click OK
- Select the track you wish to HUMANIZE with the LEFT button
- The track selected will reverse highlight
- Select a DESTINATION track
- Click the RIGHT button to save the editing

The music you humanized is now placed on the destination track. If you chose a track other than the original, you still have the first, unhumanized version available.

You can HUMANIZE a track back to itself, but the orginal will be erased if you do this.

To HUMANIZE A TRACK Using Key Commands:
• Press Control H. This will bring you to the initial dialog box.

Durate

You can precisely set the duration of all notes on a track. For example, if you wanted the length of the notes on a track shortened to a staccato, you could set the Durate value to 32nd notes. With this setting, each note in the track would be adjusted to this length.

Durating a track affects the length of the notes, ***not*** *note placement within time. Placement is adjusted by Quantizing or Humanizing Tracks.*

Note:
The perceived duration of a note is also dependent on the sound you're using (for example, long-attack sounds may not be heard if the notes are shortened too much).

To DURATE A Track:
- Select Durate Track from the Edit menu
  Use the LEFT button to edit the Whole Track
  Use the RIGHT button to edit the current Region
- A dialog box prompts you to select the Duration value

You are not bound to just these 9 values shown; click the box marked Other. You now have the option of entering your own length from any beat value between a whole note (384 ticks) and a 384th note (1 tick). You could use 94 ticks, for example, if you wanted each Note to be slightly shorter than a quater note.

- Select the track you wish to DURATE with the LEFT button
- The track selected will reverse highlight
- Select a DESTINATION track
- Click the RIGHT button to save the editing

The music you durated is now placed on the destination track. If you chose a track other than the original, the original undurated version is still available.

You can DURATE a track back to itself, but the orginal will be erased if you do this.

To DURATE A TRACK Using Key Commands:
- Press Control D. This will bring you to the initial dialog box.

Transpose Track

You can transpose the information on one track (up or down) in a range of one half-step to multi-octave jumps. This function actually changes the note information and saves it at the new value. (Global Transposing does not change the note information on each track; it just adjusts the values as they are sent out -- See Global Transpose, Chapter 6.)

To TRANSPOSE A Track:
- Select Transpose Track from the Edit menu
  Use the LEFT button to edit the Whole Track
  Use the RIGHT button to edit the current Region
- A dialog box prompts you to select the amount and direction to transpose:

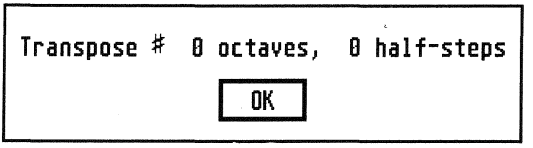
- Click on the # (or b) to toggle up (or down) transpose
- Click on the digits to select the amount to transpose by
- Click the RIGHT button to increase
- Click the LEFT button to decrease
- Click OK to continue
- Select the track you wish to TRANSPOSE with the LEFT button
- The track selected will reverse highlight
- Select a DESTINATION track
- Click the RIGHT button to save the editing

The music you transposed is now placed on the destination track. If you chose a track other than the original, you still have the first, untransposed version available.

You can TRANSPOSE a track back to itself, but the orginal will be erased if you do this.

To TRANSPOSE A TRACK Using Key Commands:
• Press Control T. This will bring you to the initial dialog box.

Note:
You can also transpose each track in real-time (as the song plays). This is described later in this chapter.



TRACK MANAGEMENT

MidiTrack ST allows some very sophisticated track adjustments to offer even greater flexibility in arranging your music.

Copy Track

There may be times when you need to copy all of the information from one track to another. You may want to copy a track: to set different track delays on the copied tracks for creating an echo effect; to set each copied track to a different MIDI channel for creating a fuller sound using multiple instruments; or to reorganize tracks so they appear in a different order.

To COPY A Track:
- Left Click on Copy/Swap Track from the Edit menu
- Select the track you wish to COPY with the LEFT button
  The track selected will reverse highlight
- Select an empty track
- Click the RIGHT button to save the copy

The track you selected is now a copy of the original track. The Name, Channel, and Port are also copied unless they are already set on the Destination Track.

Copy Track copies any Track Type (Track Types are: MIDI, Chain, Tempo, Meter, and Shadow).

To COPY TRACK Using Key Commands:
- Select the Track you want to copy (with Up / Down Arrows, etc).
- Press Control C to copy.
- Press Insert to select the track as the Source Track
- Select a destination Track (with Up / Down Arrows, etc).
- Press ClrHome to save.

Swap Track

Once a song has been worked on for a while, you may find your tracks and ideas scattered among the 60 tracks. Or you may just want to organize your tracks in a different manner.

If you Right Click on the Copy/Swap entry, you'll be able to move tracks and exchange all information between two tracks.

To SWAP Two Tracks:
- Right Click on Copy/Swap Track from the Edit menu
- Select one of the tracks you wish to Swap with the LEFT button
  The track selected will reverse highlight
- Select the other track you wish to Swap with the RIGHT button
  (An empty track would make this a MOVE TRACK operation)
- Click the RIGHT button to save the copy

The track you selected is now a copy of the original track.

Copy Track copies any Track Type (Track Types are: MIDI, Chain, Tempo, Meter, and Shadow).

Everything gets swapped, including:
- name
- channel/port
- delay
- transpose
- all Section Track and Register Mute assignments
- Shadow relationships

You can swap all the tracks around any way you want and still have everything play the same. (Be aware, however, that on any tick, the Events on Track 1 are sent first, then those on Track 2, etc. So tracks with critical timing information on them should go on low-numbered tracks, if possible.)

To SWAP TRACK Using Key Commands:
- Select the Track you want to swap (with Up / Down Arrows, etc).
- Press ClrHome (which will give you right click equivalent)
- Press Control C to swap
- Press Insert to select the track as the Source Track
- Select a destination Track (with Up / Down Arrows, etc).
- Press ClrHome to select the other swap track

Shadow Track

Let's say you're walking past a lamp at night. The lamp casts a shadow of you on a wall. The shadow does everything you do, but it doesn't weigh anything. If you go away, the shadow goes away too. If someone else takes your place, their shadow takes the place of your shadow.

Similarly, a Shadow Track does everything (sending out MIDI data) the original track does (like a Copy of the original track) but doesn't use any memory. If you delete the original track, its Shadow gets deleted too. If you replace the original track with new music, the Shadow then plays that new music.

You can assign a separate Track Output Channel (and Track Output Port if using a MIDIPLEXER) and Track Offsets for each Shadow of a given track.

A good application of Shadow Track would be when you want to have one recorded part play (doubled up) on two different instruments at once. Make a Shadow of the original track. Set the Track Output Channel for the original track to one of the instruments, and the Output Channel for the Shadow Track to the other instrument. Now every time you want to edit that part, edit the *original* track. When you replace the original track with the edit, the Shadow Track will also be replaced in the same step. You could use Copy Track instead of Shadow Track, but you would use more memory, and you would have to re-Copy the original track after each edit.

To Create A Shadow Track:
- Select Shadow Track from the Edit menu
- Select the Original Track you wish to SHADOW (Left button)
  Use any MIDI Track as the source (See Appendix O -- Track Types)
  The track selected will reverse highlight
- Select an empty track
- Click the Right button to save the Shadow

The track you selected is now a shadow of the original track. The Track Type Indicator shows as a lower case **s**.

To create A SHADOW of A TRACK Using Key Commands:
- Press Control S. This will bring you to the initial prompt box.

Notes For Shadow Track

Shadow Info.....*A summary of a Track and all related Shadows can be found by selecting Shadow Info from the Track menu after selecting a track. (The keyboard equivalent for Shadow Info is Control Shift S.)*

Track Type.....*You cannot Shadow a Chain, Meter, or Tempo Track. Only MIDI Tracks (or Shadows of such tracks) can be shadowed.*

Duplication.....*It is not possible to create the same Shadow twice. If this is attempted, a dialog will appear saying "This Shadowing Already Exists".*

Delete/Replace.....*When you try to Delete (or Replace) a Shadow Track, you will get an alert informing you that Deleting (or Replacing) the track will take away its Shadow status, but this will not affect any other related Shadows or the Original Track. If you click on "Shadows?", you will get a Shadow Info dialog (click OK to return).*

If you try to Delete (or Replace) the Original Track, you will be warned with a similar dialog box, except that in this case, all the Shadow Tracks will be Deleted (or Replaced).

Shadow Offsets.....*When you make a Shadow Track, it inherits the Track Offset settings from the Original Track.*

Shadow Indicator.....*A Shadow Track's percentage is shown as "**s01**" (instead of a percentage), where the two-digit number after the "**s**" shows its Original Track. Use Shadow Info (Track menu) to get an in-depth look at all Shadow Information (such as whether any other tracks are Shadows of the same Original Track).*

Instant Shadow

Both Click to the left of the track number (in the Track Pointer column) to create a Shadow of the Track on the next empty track.

To Instant Shadow a track:
- Both Click to the left of the track number
- A shadow of the track will be placed on the next empty track

This will not interrupt playback. You can do this while the Multi-Function column is displaying Track Transpose or Track Offset settings, and layer information in pitch or time very quickly.

Note:
You can only Instant Shadow linear tracks including when in Cycle Record Mode (see Chapter 5 -- Recording A Section Using Cycle Record). It won't work for tracks that are under chain control.

Mix Tracks

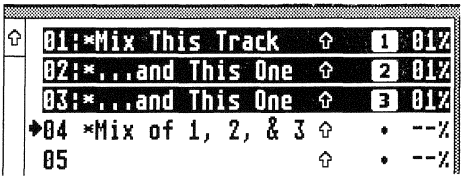
In multi-track situations, you may often find yourself wanting to mix several tracks together to better organize your music. Unfortunately, in the analog world, each time you combine tracks (bounce down), your sound quality deteriorates.

Thankfully, when you mix tracks together using MidiTrack ST, there is no generation loss; it's merely a clever manipulation of numbers. You may combine tracks as often as you need without any sound quality change. If you need more than 60 tracks, you can MIX tracks together down to one destination track, and delete the source tracks.

MidiPlexer Note:
If you try to Mix Tracks that are on different Ports, a warning will appear. Each Port has to be Mixed separately if you want the correct Port assignments maintained, as the each of the 60 tracks can only be assigned to one Port.

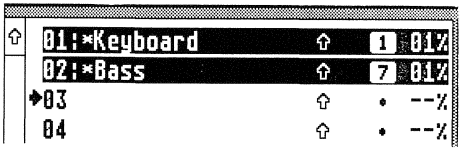
To MIX Tracks:
- Select Mix Tracks from the Edit menu
- Select the tracks you wish to MIX with the LEFT button (1 to 60 tracks)
- Each track selected will reverse highlight
- Select an empty track
- Click the RIGHT button to save the mix

The tracks you selected are now combined onto one track.



If you combine tracks that are assigned to different MIDI channels, each of these tracks will retain their MIDI channels, even though all the information is stored on one track.

If you MIX this:



Track 1 contains Keyboards assigned to MIDI channel 1
Track 2 contains Bass assigned to MIDI channel 7
Track 3 is just about to be a Mix of Tracks 1 and 2

Track 3 will contain the keyboard part, which will still be assigned to MIDI channel 1, and the bass part, assigned to channel 7. If you mute tracks 1 and 2, and play back track 3, you will hear both the keyboards play on channel 1 and the bass play on channel 7.

You can also use this function ***to permanently change the MIDI channel assignment of a track***. For example, let's say track 5 has information recorded from MIDI channel 1. You assign that track to play out MIDI channel 3. Now (for some reason) you want to permanently have all of the events on that track be set to MIDI channel 3. Select Mix Track from the MIDI menu and mix track 1 to track 1. This will change all events from channel 1 to 3.

Note:
If two tracks are assigned to the same MIDI channel, mixing them will combine the channel information, and it will be very difficult (perhaps impossible) to separate (unmix) the different parts back to their original tracks.

To MIX TRACKS Using Key Commands:
• Press Control M. This will bring you to the initial prompt box.

eXtract Channel

It is possible to have more than one channel recorded on the same track. Most often it will be because of Mixing Tracks which are assigned to different MIDI channels.

Use eXtract Channel to move selected Channels from one track to another. Afterwards, you choose whether to remove those Channels from the original Track or leave it unchanged.

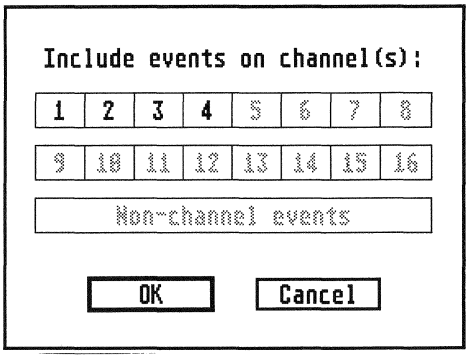
Each Event is always recorded with a MIDI channel assigned to it. Therefore, it is easy for MidiTrack ST to search through a track and find Events with specific MIDI channels.

Extracting a Channel could be useful if you want to make additional individual edits to previously-mixed tracks.

To EXTRACT A Channel From A Track:

- Select eXtract Channel from the Edit menu
  Left Click = Whole Track, Right Click = Region
- It prompts for a Source Track which has multiple channels on it
- The dialog shows a button for each Channel plus a box for non-channel events (all System Exclusive messages are treated as non-channel events) (Channels on the Track are **bold**; those not on the Track are dimmed)

- Select Channel(s) you want to extract by clicking on Channel Number(s)
- The channel box(es) will reverse highlight to show you which ones you've marked. If you change your mind about any of them, just point and click a second time and you'll de-select the channel.
- If you want to extract Non-channel events (such as Tune Request or System Exclusive information), you'll need to select this box as well.
- When you are finished, click OK
- Select a track to Save the extracted information To with the RIGHT button (move the arrow selector to the destination track and click with the RIGHT button)
- A dialog box appears asking whether you want to Remove the selected information from the Source Track or Leave it untouched
- Choose Remove if splitting the Channels apart
- Choose Leave if duplicating a Channel (example, to double up a part)



Note:
Conditions when eXtract Channel doesn't ask "Remove or Leave"
• Save Destination on same Track as Source -- Source is replaced.
• Region eXtract -- leaves the Source.

If you select a track that doesn't have several MIDI channels mixed in, there isn't going to be much of a result. You are extracting information that is assigned to specific MIDI channels that you previously combined.

From our example, let's EXTRACT MIDI Channel 1 from Track 4 and save it to track 5.

- Select eXtract from the Edit menu
- Left Click on Track 4 (the Source)
- Click on 1 as a channel to eXtract
- Right Click on Track 5 (Destination Track)
- Click on Remove
- Track 5 now contains MIDI Channel 1 events
- Track 4 now only has Channels 2 and 3

(As an aside, following the above example, Track 5 is also a copy of Track 1).

Note:
When using eXtract Channel, the Destination Track inherits the Port from the Source Track.

Unmix Channels

Unmix Channels is a one-step function which can produce up to 17 tracks, each with only one MIDI channel on it (the "17th" MIDI channel is non-channel information, such as System Exclusive or Tune Request).

Unmix Channels can be used to split apart Tracks with multiple channels recorded from other sequencers, split keyboards, or a MidiPlexer.

To Unmix Channels:

- Select Unmix Channels from the Edit menu
- Select the Source Track
  (If there are fewer than two channels on it, it tells you)
- It prompts you to "Select FIRST Destination Track"
- Select a Destination Track to start the Unmixing process
- From this starting track, it will automatically unmix all channels from the Source Track, and save each channel on a different empty track.
- As it saves tracks, it sets the Track Channel to indicate which channel was placed on which track.
- If the last track contains non-channel information, the Track Channel is cleared (dot) and a dialog reminds you about this track.

All the saving by this operation will be done to empty tracks, so the Destination Track you should select is the first of a group of empty tracks (you only select the first; the program picks all the ones after that). If you happen to select a used track, it won't be replaced; the program will put the first channel on the next empty track past that used track.

To UNMIX CHANNELS Using Key Commands:

- Press Control U.
- Select the Track from which you want to Unmix Channels.
- Select a Destination Track (with Up / Down Arrows, etc).
- Press ClrHome to save.

Note:
When using Unmix Channels, the Destination Track inherits the Port from the Source Track.

ZoneSplit Track

This function extracts a Zone of Notes from one track to another. Afterwards, you choose whether to remove this Zone from the original Track or leave it unchanged.

Set up a Zone of Notes to be extracted. For example, let's say you've played a piano part with left and right hands at the same time. Now what you want is a two-track piece -- one track the right hand, the second track the left hand.

You could set up a Key Zone for the left hand to be C-2 to B2, which would be any note below middle C. The Zone for the right hand would be C3 to G8, which is any note at or above middle C.

Another good example is removing a drum part from a track. Say you record a kick (set to F1) and a snare (set to G1) at the same time from a drum machine that can only transmit on one MIDI channel at a time. Copy a zone from F1 to F1 to separate the kick. Omit the same Zone to Remove the kick from the track.

Remove a note from a track = omit/copy
Pull out a note and put it on a separate track = copy/omit

There are several ways you can use ZoneSplit:

- To put everything inside a key zone on one track (the Destination) and everything outside that key range on another track (the Source)
- To Copy everything inside a key zone to another track
- To remove (Omit) everything inside a key zone from a Track
- To Copy just a Region of a Track
- To erase (Omit) just a Region of a Track

To ZONESPLIT A Track:

- Select ZoneSplit Track from the Edit menu
- A dialog box appears asking you to set a Key Zone
- The Note Values shown are the lower and upper Zone limits
- Click on the number or letter to change it
- If you want to extract the same single note from throughout a track, set both low and high limits to the same note
- Alternate Click on either Note Value to reset the Zone to all Notes (C -2 to G 8)
- The ZoneSplit dialog contains two buttons, each of which can be set to COPY or OMIT
- The first button determines whether the Note Range will be copied or left out of the destination track
- The second button determines whether non-Note events will be copied or left out of the destination track.
  Examples of non-note events are: channel pressure, pitch bend, patch changes, control changes, system events.
- Once you've established the zone, click OK
- Select a track to ZONESPLIT with the LEFT button
- Click on the destination track with the RIGHT button
- If the first button was set to COPY, a dialog box appears asking whether you want to Remove the selected information from the Source Track or Leave it untouched
- Choose Remove if splitting the Channels apart
- Choose Leave if duplicating a Channel (example, to double up a part)

If you want to split a track into two tracks, with notes inside the specified range on one track, and notes outside the specified range on the other track, set ZoneSplit to COPY the notes between the low limit and the high limit, and REMOVE those notes from the source track when prompted.

If you want to copy a certain note or range of notes onto another track, leaving them in the original track, set ZoneSplit to COPY the notes between the low limit and the high limit, and LEAVE those notes in the source track when prompted.

If you just want to remove (erase) a certain note or range of notes from a track, set ZoneSplit to OMIT the notes between the low limit and the high limit. You can save the result destructively back to the source track (if you're sure), or non-destructively to another track (so you can play it to decide if you removed the right notes, before deleting the original track).

If you want to copy everything in a Region of a track, and erase everything outside that Region, use Region ZoneSplit, reset the note limits by Alternate Clicking on either of the note names, and COPY the notes.

If you want to erase everything in a Region of a track, but retain everything outside that Region, use Region ZoneSplit, reset the note limits by Alternate Clicking on either of the note names, and OMIT the notes.

The second line in the dialog box lets you either COPY or OMIT non-note events (such as After Touch, Pitch Bend, etc). The wording refers to whether these events will be left in or removed from the Destination Track you save.

Notes:
Conditions when ZoneSplit Track doesn't ask "Remove or Leave"
- **First button set to OMIT Note Range -- leaves the Source.**
- **Save Destination on same Track as Source -- Source is replaced.**
- **Region ZoneSplit -- leaves the Source.**

Since Polyphonic Key Pressure events are associated with particular notes, they are categorized (for ZoneSplitting) with notes (not as non-note events). ZoneSplit will extract Note On, Note Off, and Polyphonic Key Pressure events for a specific range.

MidiTrack ST uses C3 to denote middle C on a piano (MIDI Note Number 60). Due to different standards in different countries, as well as keyboard transpose settings, this may not match what your keyboard calls "C3".

When using ZoneSplit, the Destination Track inherits the Channel/Port from the Source Track.

KeySplit Track

KeySplit Track is a one-step function which puts each Note of a track on a different track -- perfect for pulling drum machine drums apart (instant "one drum per track").

To KeySplit A Track:
- Select KeySplit Track from the Edit menu
- Select the Source Track
  (If there are fewer than two notes on it, it tells you)
- It prompts you to "Select FIRST Destination Track"
- Select a Destination Track to start the KeySplitting process
- From this starting track, it will automatically split all Notes from the Source Track, and save each one on a different empty track.
- As it saves tracks, it names the track to indicate which Note Value was placed on which track.
- Non-note data (pitch bend, patch changes, etc), if any, is placed on a separate track

All the saving by this operation will be done to empty tracks, so the Destination Track you should select is the first of a group of empty tracks (you only select the first; the program picks all the ones after that). If you happen to select a used track, it won't be replaced; the program will put the first channel on the next empty track past that used track.

To KEYSPLIT TRACKS Using Key Commands:
- Press Control K
- Select the Track you want to KeySplit
- Select a destination Track (with Up / Down Arrows, etc)
- Press ClrHome to save

Note:
When using KeySplit Track, the Destination Track inherits the Channel/Port from the Source Track.

Using our drum Note application from the introduction, let's see how we can re-map drums notes very quickly. First KeySplit a track containing all drum parts. Then, using Real-Time Track Transpose (see description below), transpose the track until the drum notes for the new drum machine match the current value of the transposed track(s).

Track Offset

It helps to have complete control over where tracks sit in relation to each other. This function can adjust the "feel" of the song. If you slide the Snare track just a little bit late, you'll find your music is much more "set in the groove". If you adjust it a bit early, the Snare will seem to have more "push".

Another use for this function may be to compensate for sounds that have slow attacks and therefore sound "late".

The Track Offset function allows you to offset each track in time relative to the other tracks. It works in real-time, meaning while the song is playing you can adjust the Offset value.

This function is one of the modes found on the Multi-Function Column. The Multi-Function Switch is located at the bottom of this column.

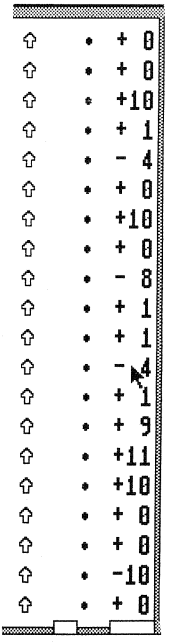
(See Chapter 3 -- Track Display & Appendix O -- Modes)

To Set A TRACK OFFSET:

- Click the Multi-Function Switch until you see the Track Offset settings shown as a column of + 0's
- To the right of each track, there is a positive or negative number. This represents each track's relation to the downbeat of measures:

0	**is right on the beat**
–	**plays earlier**
+	**plays later**

- Scroll to the track you want to Offset
- Point to a track's offset number
- Use the RIGHT button to increment or the LEFT button to decrement
- Click on either digit



- Setting the number in the negative range will make the track play earlier
- Setting the number in the positive range will make the track play later
- Each track can be adjusted early or late over a range from -90 to +99 ticks

The time shift change is instantaneous. Thus you can fine tune track Offsets quickly by experimentation.

To Adjust Track Offset Values Using Key Commands:
- Press Numeric - (decrease) and + (increment) to adjust the currently selected track's Offset. Multi-Function Column must be in Offset Mode.

Notes For Track Offset

The Multi-Function Column.....*There is a small box under the Track Percentage Column know as the Multi-Function Switch. Clicking on this switch toggles between Track Percentage, Track Offsets, Track Transpose, and Chain Activity. (The keyboard equivalent is* ***Control Numeric -*** *. See Appendix K -- Key Commands.)*

Track Type Indicator.....*When displaying Track Offsets, the Track Type Indicator for MIDI Tracks is gone when a track is empty. That way you can still spot empty tracks, even when you can't see the percentage values.*

Chain Delays.....*(See Chapter 5 -- Chains) If you change a Track Offset during playback, and the track is part of a Chain, it has to do some recomputations to continue to play the track with the right Offset when it begins the next Section in the Chain. Any slight delay you hear is normal and necessary.*

Mixing with Offsets.....*If you MIX a track which has a non-zero Track Offset setting, the delay permanently changes the timing of the destination track. All other functions copy the Track Offset setting from the source to the destination track. The actual times within the track remain the same relative to the original track.*

For example, if a track contains a note that starts at beat 00004.00, and an Offset of -10 is set for that track, it will play the note at 00003.86. The note event within the track is still at 00004.00, but the Offset value is affecting the playback. If you Copy the track, the resulting track will also have the note event at 00004.00 and an Offset value of -10. However, if you Mix the track, the resulting track will have the note event at 00003.86 and the Offset value will be set to + 0.

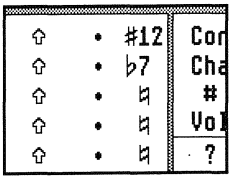
Key Commands.....Numeric + (plus) and - (minus) shift the offset value by 1. Shift Numeric + (plus) and - (minus) shift the offset value by 10.

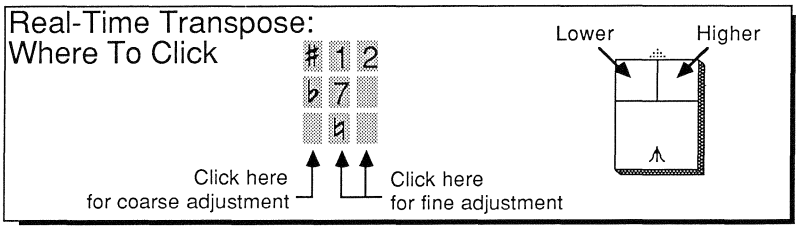
Real-Time Track Transpose

It is possible to transpose each track independently in real time. Click on the multi-function button until you see a column of natural signs.

Keep in mind that the column is three digits wide. Click in the first column to increment/decrement by octaves; click in the second or third column to increment/decrement by half-steps.

The track transpose settings are made permanent when you Mix the tracks (including via Glue In Section and Flatten Chain). The track transpose setting is inherited in track-to-track operations similar to track offset, and is set to natural (untransposed) after Mix.





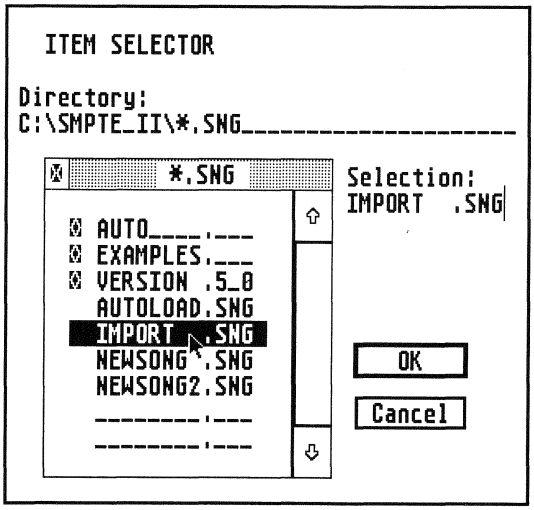
Note:
Use Transpose Track from the Edit menu if you need to transpose a Region of a Track.

Import Track

MidiTrack ST allows you to merge separate songs and individual tracks. If you had a favorite groove you'd recorded and saved, and wanted to add it underneath a new song you were working on, you could import the tracks from the original file into the current file and see how it sounded.

To IMPORT A Track:

- Select Import Track from the File menu
- An Item Selector appears with the directory of the song files on the disk in the Current Drive
- Select the song file which contains the one track you want to Import
- Click on the name of the file. The name is automatically transferred to the selection line.

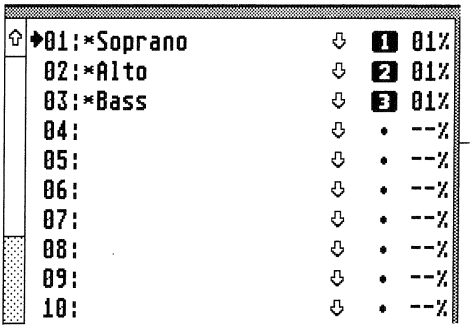


(Make sure the disk in the drive contains at least one song file with an extension of **.SNG**)

- Click OK

The song file track titles quickly load into MidiTrack ST and cover the track titles over the current tracks. It has **NOT** replaced your current tracks, but is only providing you a means of seeing what tracks exist in that song file.

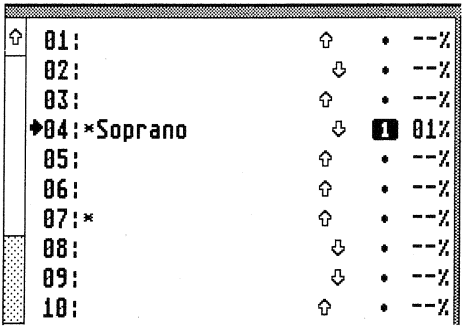
- Select the track you wish to Import
  The mouse now controls the track selection arrow
- Click the LEFT button once



Almost immediately, the screen returns to the display of the current song.

- Choose an empty track to store the new Track
- Click the RIGHT button

The track you selected is read off of the disk and stored on the new track of the current file. All information is transfered including the track name and channel assignment. The new track arrives muted to avoid confusion with the current setting. To hear it, turn it ON (Unmute it).



CHAPTER 5
ADVANCED MUSIC PROCESSING

In This Chapter:

- Advanced Editing Features:
  - Insert/Remove Time
  - Alter Timespan
  - Velocity Adjust
  - Replace Every
  - Eliminate Every
  - Optimize Every
  - Level Hold Pedal
  - Tempo Track
  - Meter Track

- Sections
  - Understanding Section Mode
  - Defining Sections
  - Section Mode Buttons
  - Cycle Recording
  - Cycle Take Mode
  - Quantized Record
  - Record Filter
  - Inspect Sections
  - Two Uses For Sections
    - (1) Glue In Section
    - (2) Assemble Chain
  - Using Chains
  - Flatten Chain

Key Words:

- Compress
- Control Change
- Flatten
- Glue In Section
- Section
- Velocity

ADVANCED EDITING FEATURES

There are further options to improve or adjust your performance and increase the number of arranging possibilities. When using the following functions, you should be aware of the different modes for setting time: **Register Mode** which creates Regions (see Whole/Region Editing -- Chapter 4), and **Section Mode** which defines the Start and End Times in a Section (see Section Mode below).

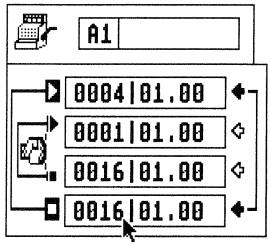
Insert/Remove Time

When you want to add or erase time to/from the middle of a track, use the Insert/Remove Time function which can be found on the Edit menu.

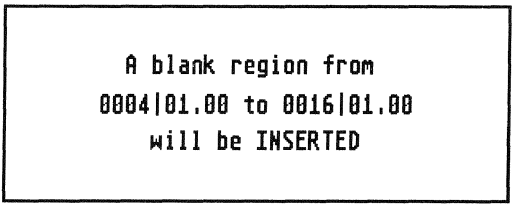
When Inserting Time, it will insert a blank region from the Region Start to the Region End, then take the part of the track that used to start at the Region Start Time and append it after the Region End Time.

When Removing, it will take the part of the track continued from the Region End Time and place it at the Region Start Time, getting rid of everything (blank or not) that was between the Region Start and Region End Time.

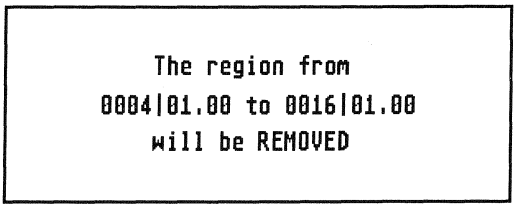
Things To Remember:
- The Punch Method function (Options menu) affects this operation
- When Inserting Time, choose Insert/Remove Time and click Left
- When Removing Time, choose Insert/Remove Time and click Right
- Use Region Start and End Times in Register Mode (cash register)
- You can use Insert/Remove on the following Track Types:
  MIDI, Shadow, Tempo, and Meter (not Chain Tracks)



To Insert Time:
- Set the Region Start Time (exactly where you want to insert blank space)
- Set the Region End Time (later in time)
  The difference between the Region Start and End Times is the amount of time that will be added. Every Event after the Region End Time will move later in time.
- Select Insert/Remove Time from the Edit menu
- Click Left for Insert
- Select the Track to edit (Click Left)
- Select a Destination Track (Click Right)



To Remove Time:
- Set Region Start Time to the exact value where you want to begin Removing Time
- Set Region End Time to the exact value where the next new part starts
  The difference between the Region Start and End Times is the amount of time that will be deleted
- Select Insert/Remove Time from the Edit menu
- Click Right for Remove
- Select the Track to edit (Click Left)
- Select a Destination Track (Click Right)



Alter Timespan

This function can be used to expand or compress a track or portion of a track in time. This does not alter any Tempo Settings (which would affect the whole song, not just one Track); instead it moves the events on a given Track further apart or closer together.

Some possible applications of Alter Timespan include:

- By doubling (002/001) the length of the whole track, and also doubling the Tempo, and doing this to each track, you can turn a song recorded at MidiTrack ST's normal resolution of 96 ticks per quarter note into a song that plays back at an effective resolution of 192 ticks (see About Sequencer Resolution in Appendix A).

- By figuring out how long a piece of music should take (for example, 30 seconds) and how long it actually takes (for example, 35 seconds) and using that ratio (030/035), and doing this to each track, you can fit a piece of music to a required time.

- By using a ratio very close to one (for example, 095/096) and playing the Altered track along with the original, you can simulate the effect of two tape recorders playing the same thing starting out synchronized but slowly drifting out of sync!

- By using simple integer fractions (for example, 003/004) on a short part that will be looped, you can generate polyrhythmic effects.

Let your imagination lead you to other effects via this function!

To ALTER TIMESPAN A Track:

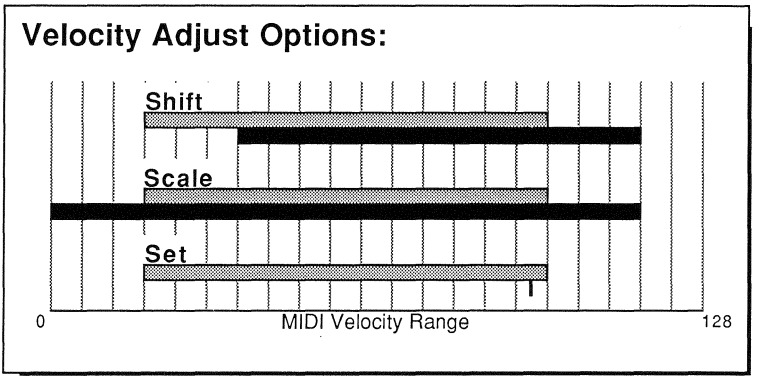
- Select Alter Timespan from the Edit menu
- Left Click to affect the Whole Track
- Right Click to affect a Region of the Track
- Set the desired ratio in the dialog box
- If the first number (numerator) is BIGGER than the second number (denominator) the track will be expanded in time
- If the first number is SMALLER the Track will be compressed in time
- You can change each number by clicking on it, pressing Esc, and retyping the number
- Click OK
- Left Click on the Source Track
- Right Click to select the Destination Track

Velocity Adjust

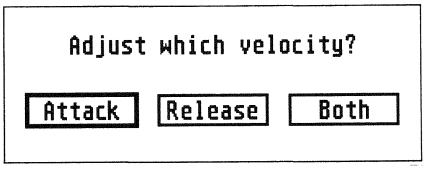
An adjustment you may want to make to the overall performance of your music is the relative volume of one track to another. In an analog multi-tracking situation, this is referred to as mixing. Although MidiTrack ST is not an automated mixing console, you can, to a certain degree, adjust the relative levels of different parts and tracks.

Most synthesizers have velocity sensitive keyboards. Velocity sensing is a matter of detecting how fast you press down on the key from the top of the key to the bottom of the keypad -- a measurement of distance vs time. If you press a key fast, the instrument measures this as a maximum velocity of 127; the slowest pressing of a key registers as a velocity of 1. As a general rule, when you press slowly, the sound is softer, and when you press faster, the volume increases.

MidiTrack ST allows fine tuning of velocity information. This is dependent on how your instrument is programmed to respond to velocity. If an instrument you have is not velocity sensitive, you won't hear any difference; if it is velocity sensitive but the patch is not using the velocity parameters, again you won't hear any change.

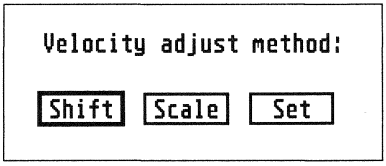


To ADJUST VELOCITY:
- Select Velocity Adjust from the Edit menu
- A series of dialog boxes appear giving you options to alter the velocity



The first dialog box asks which velocity you want to adjust: Attack (how quickly you strike the key), Release (how quickly you let go of the key) or both.

Release velocity is dependent on whether or not your instrument is programmed to take advantage of this parameter. Some sounds can be made to ring out or change depending on how fast you let go of the key.



The next dialog box prompts you to select one of three available adjustment methods: SHIFT, SCALE or SET.

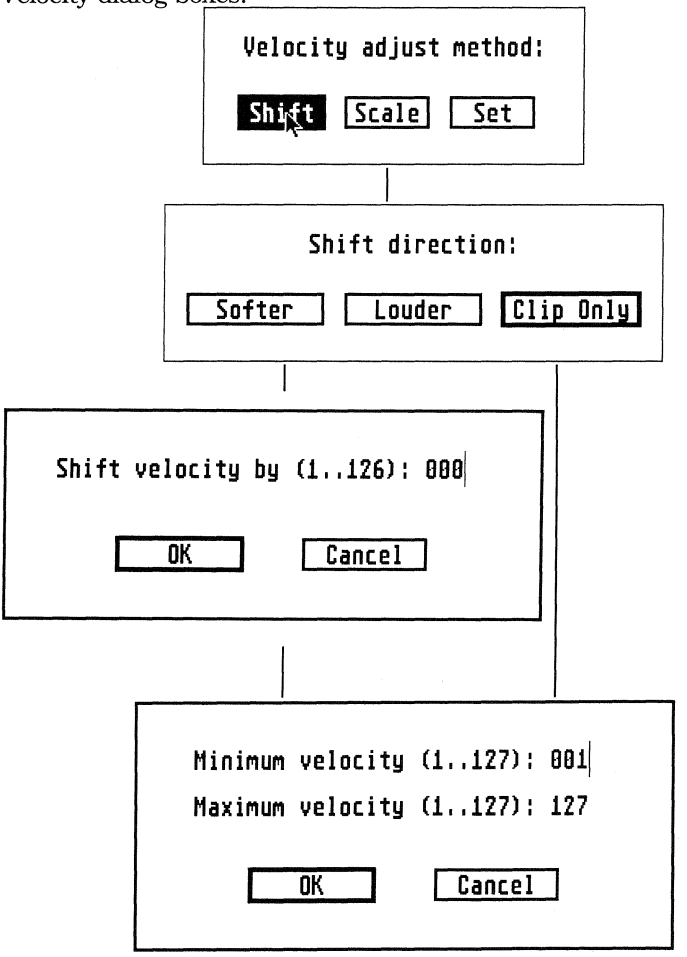
SHIFT VELOCITY shifts the overall velocity of the track softer/louder, or clips velocity at a specified level.

SCALE VELOCITY expands or compresses velocity by a specified factor relative to a center velocity.

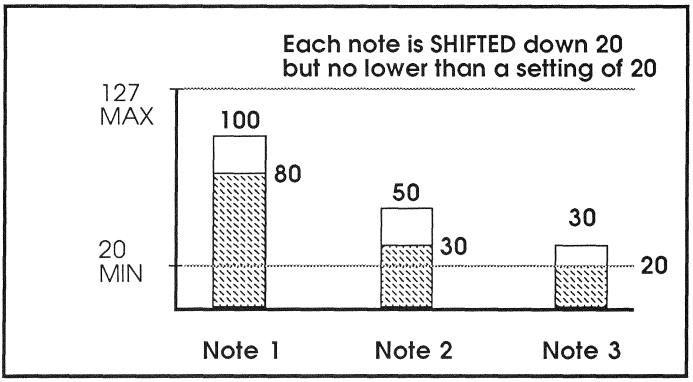
SET VELOCITY sets velocity at a specific level for all notes on a track.

Selecting the SHIFT method provides a dialog box that requests which shift direction you want: SOFTER, LOUDER or CLIP ONLY. Follow the map below for the Prompts and alternatives.

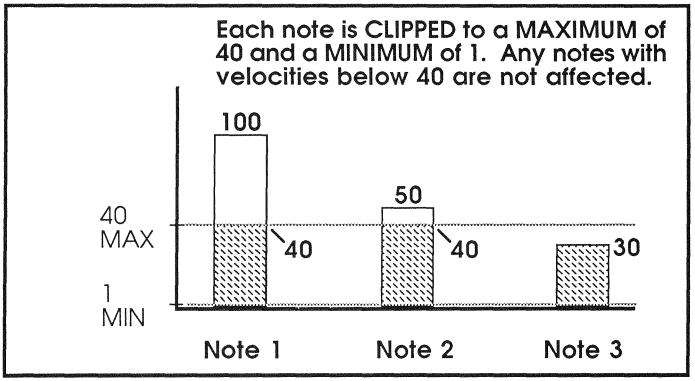
The following diagram shows the various paths you can take through the SHIFT Velocity dialog boxes:



SHIFT EXAMPLE #1
Let's take a track with 3 notes, the velocity of the first note being 100, the second note 50 and the third note 30. Set the Shift direction Softer by 20, with the minimum velocity set to 20 and the maximum set to 127. The resulting note velocities would be 80, 30 and 20 respectively. The third note would have been decreased to 10 if we had set the minimum velocity to 10 or less. But since we set it to 20, the note could not be shifted lower than that.

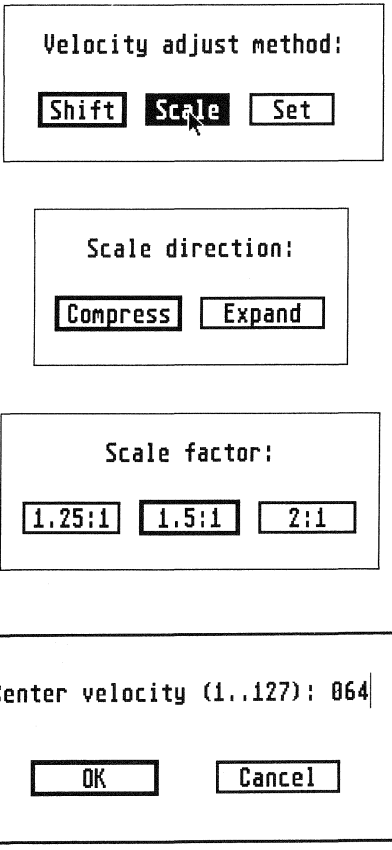


SHIFT EXAMPLE #2
Taking the original three-note track, if we had decided to Clip the velocities only, and had set the minimum to 1 and the maximum to 40, after processing the track, the note velocities would be 40, 40 and 30, respectively. In other words, it only affected those notes above 40, bringing them down to the maximum level. Of course, if we had set the maximum velocity to 127 and minimum to 40, the note velocities would have been 100, 50 and 40, as only the third note was below the minimum level.



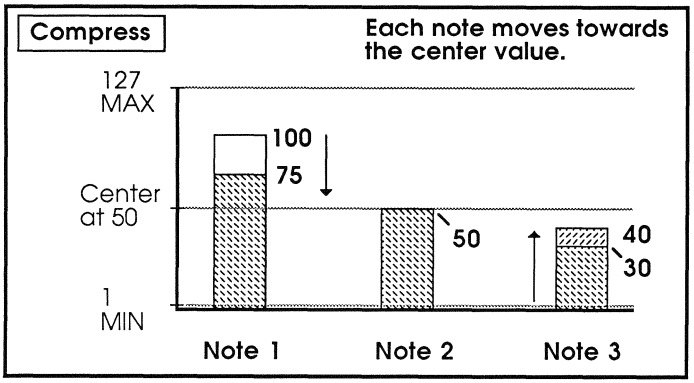
If you select the SCALE method, choose which scale direction you want: Compress or Expand. Next, choose the scaling factor. Next, set a center velocity that the scaling can use as a reference. And finally, set the minimum and maximum velocity levels.

The following diagram shows the various paths you can take through the SCALE Velocity dialog boxes:



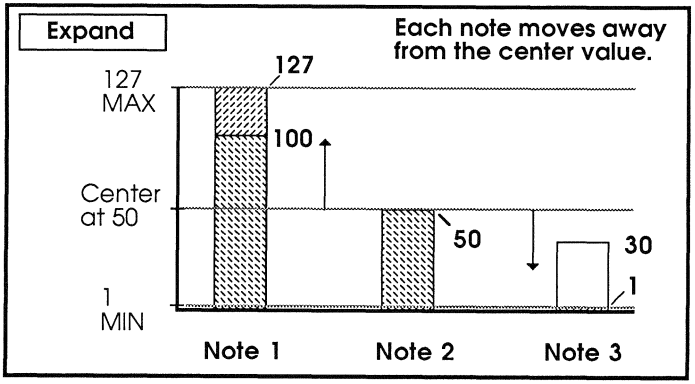
SCALE EXAMPLE #1

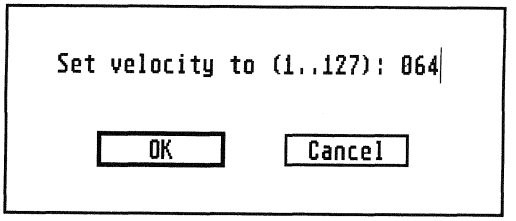
For our example, let's use the same three-note track with velocities of 100, 50 and 30. Compress the velocities at a scale of 2 to 1 with a center velocity of 50, minimum velocity set to 1 and the maximum set to 127. Each note velocity would be 75, 50 and 40 respectively. The first note is lowered 1/2 of the way to the center velocity (50% of the distance between 100 and 50 is 25, 100-25 = 75), the center note stayed the same (50% of the distance between 50 and 50 is 0, 50-0 = 50) and the third note was raised half of the way to the center velocity (50% of the distance between 50 and 30 is 10, 30+10 = 40).

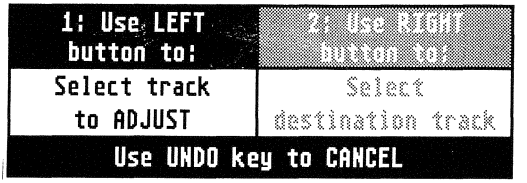


SCALE EXAMPLE #2

If we choose to EXPAND within the same parameter settings, the first note will expand to 127 the second will remain at 50 and the third will be set to 1. Remember, on expansion the process is reversed: instead of being half the distance between the note's velocity value and the center value, at 2 to 1 it's twice the amount.







Selecting the SET method simply means that you will adjust ALL velocities on the track to one value.

Once you've selected the method of velocity adjustment you desire, and set the necessary parameters, you have one last step. Using the Track selection arrow, point to the track you wish to adjust, and click with the LEFT button. The track will highlight to designate that it is marked. Choose the track you want to store the velocity adjustments to and click with the RIGHT button.

To ADJUST VELOCITY Using Key Commands:
- Press Control V. This will bring you to the initial dialog box.

Replace Every

Replace Every lets you take all occurrences of one particular type of controller in a track, and replace them with another type of controller. The controllers you can change from/to are:

Control Change #0 thru #120, including:
- 1 = Mod Wheel (+ only)
- 2 = Breath Controller (+ only)
- 4 = Foot Controller (+ only)
- 6 = Data Entry
- 7 = MIDI Volume (+ only)
- 10 = MIDI Pan (+/-)
- 64 = Sustain (on/off)

Channel Pressure (After Touch) (+ only)
Pitch Bend (+/-)

Keep in mind that changing a controller with a positive-only range (such as mod wheel or MIDI volume) to/from a controller with a positive/negative range (such as pitch bend or MIDI pan) is not likely to produce useful effects.

To Replace Every Controller In A Track:
- Select Replace Every from the Edit menu
- Choose the controller type (Ctrl Chng, Chnl Pres, Pitch Bnd) you want to change FROM
- If you chose Ctrl Chng, enter the specific Control Change number you want to replace on the next dialog box
- Choose the controller type you want to change TO
- If you chose Ctrl Chng, enter the specific Control Change number you want to replace with on the next dialog box
- Select the track with the controller events to be Replaced with the Left Button
- Use the Right Button to choose an empty destination track

Example:
Let's say you've recorded a track using channel pressure (after touch), but now you want to send that track to a synthesizer which doesn't respond to channel pressure, but which does respond to mod wheel (control change #1) producing the effect you want. Using Replace Every you can change all occurrences of channel pressure in the track to mod wheel events instead. When it prompts "Change FROM" click on Chnl Pres, when it promts "Change TO" click on Ctrl Chng, and when it prompts "Control Change #" enter 001 for mod wheel.

Eliminate Every

Eliminate Every lets you erase all occurrences of one particular type of controller in a track. The controllers you can erase are:

Control Change #0 thru #120, including:
- 1 = Mod Wheel
- 2 = Breath Controller
- 4 = Foot Controller
- 6 = Data Entry
- 7 = MIDI Volume
- 10 = MIDI Pan
- 64 = Sustain

After Touch (Channel or Polyphonic Key Pressure)
Pitch Bend

To Eliminate Every Controller In A Track:
- Select Eliminate Every from the Edit menu
- Choose the controller type you want to erase (Ctrl Chng, Aft Touch, Pitch Bnd)
- If you chose Ctrl Chng, enter the specific Control Change number you want to eliminate on the next dialog box
- Use the Right Button to choose an empty destination track
- This track will containing everything except the controller you eliminated

Note:
By using Key Command Macros, you can set up one key to KEEP with After Touch and another key to KEEP without After Touch -- Instant "Decision" Filtering. (See Chapter 6 for details)

Example:
Let's say you've recorded a track using after touch, but now you want to play that track on a synthesizer which doesn't respond to after touch. By eliminating After Touch from the track, less memory is used and it sounds the same on this instrument anyway.

Optimize Every

There are situations where you record a higher density of controller information that you need (from a wheel, lever, joystick, the Fader, or especially Yamaha's Breath Controller -- it may send as much as one value per tick, which is a lot of information), and this excess MIDI data may be interfering with playback timing.

Optimize Every can clear up a situation like this by thinning a particular controller.

To OPTIMIZE EVERY Controller Value On A Track:
- Select Optimize Every from the Edit menu
- Pick a Controller from the dialog that appears
- Select the minimum number of ticks between events (see below)
- Select a Track to Optimize
- Select a Destination Track

Optimize Every does two things:
- Eliminates all but the last event of that type on any given tick, if there are two events of the same type on the same tick
- Eliminates all events of that type which are sandwiched between two ticks which are already close enough together (as determined by the "minimum number of ticks between events" you choose in the dialog box: 2, 4, or 6).

This ensures that two events which are close together (but not on the same tick) but far enough from all others will not get touched, but if you have a stream of events on every tick, this will leave the first and last event of the stream alone but reduce the number of events inbetween, while still maintaining events every so often (as the dialog box chooses) so perceived continuity is maintained.

Optimize Every will only work with a track that has only one channel affected. If you try to process a multi-channel track, a warning will appear. If you know that the other channels contain types of events not involved in the operation you're performing then you might want to "Try anyway", but it's safest to eXtract or Unmix the channels before Optimizing.

Level Hold Pedal

If you play a part with Hold (Sustain) Pedal, it won't Auto-Score correctly into EZ-Score Plus. Hold Pedal is not scored and more than likely, because you were using a Hold Pedal, you probably played shorter durations so you end up with a lot of rests when Auto-Scoring.

The Level Hold Pedal function turns a track with Hold Pedal into a track without Hold Pedal but which plays exactly the same, by extending Notes to play as if the hold pedal held it On.

To LEVEL HOLD PEDAL On A Track:
- Select Level Hold Pedal from the Edit menu
- Select a track with Hold Pedal
- Select a Destination Track

Level Hold Pedal produces a track which plays less efficiently (a lot of Note Offs to send on one tick, instead of one Hold Pedal Off), so it is suggested that you save to an empty Destination Track. Use this new Track for Auto-Scoring, but contiue to use the original Track with Hold Pedal for playback.

Level Hold Pedal will only work with a track that has only one channel affected. If you try to process a multi-channel track with one of these functions, a warning will appear. If you know that the other channels contain types of events not involved in the operation you're performing then you might want to "Try anyway", but it's safest to eXtract or Unmix the channels before Leveling.

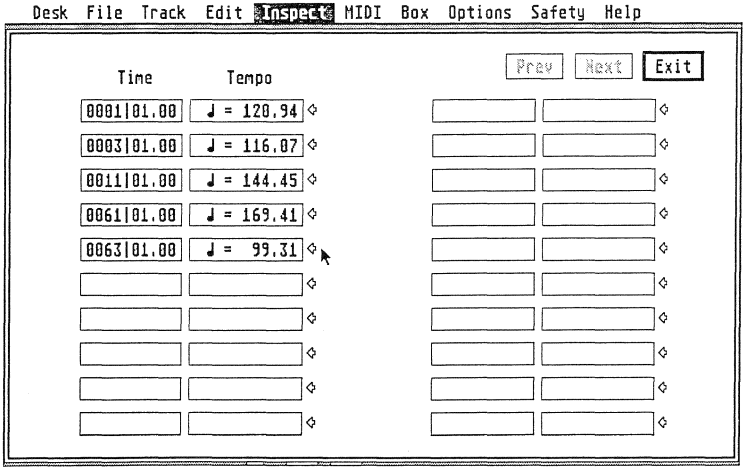
Tempo Track

MidiTrack ST includes several Track Types which store non-MIDI information that affect your song. A TEMPO TRACK is one of them. By creating a Tempo Track, you can alter tempo settings at any beat or fraction of beat, allowing you to program accelerandos / decelerandos, radically-changing tempos, or slight changes over a period of time.

To Create A Tempo Track:
- Select Tempo Track from the Inspect menu
- Select a Track to create a Tempo Track on

It is only possible to select an empty track or an already existing Tempo Track. Once a track has been selected, the first page of the Tempo Pages will appear.

The Tempo Pages are a continuous paired-column of entry slots. Each entry has one Time and Tempo setting. There is a total of 20 pages with 20 settings per page (400 possible Tempo changes in any given song file). Along the top of the Tempo Page, there are two buttons which let you scroll through the pages: **Next** and **Previous**. So if more than 20 Tempo changes are inserted, the list continues on the Next page. To view those others, click on **Next**.



Inserting A Tempo Entry:
Left Click On Arrow

Left Click on the small arrow to the right of each Time/Tempo pair to enter a time and tempo. Each time you click, a new entry will be inserted.

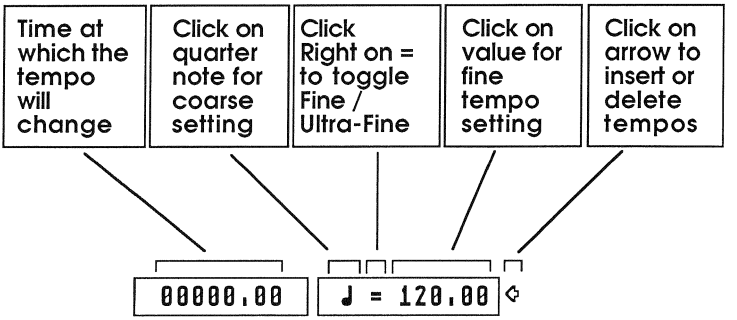
You can insert in between two existing settings or just after the last displayed setting. (When you insert between existing settings, it will insert a duplicate of that setting and move all others below that down.)

Setting Time & Tempo:
Click On Each Digit

Set the time you want the tempo to change in the TIME column, and set a tempo for that time in the corresponding TEMPO column. The first Tempo setting must be at **00000.00** and can not be removed.

By changing the tempo up or down over time, you can create realistic accelarandos and ritards; or you can change to any given tempo at any given time.

To Edit The Time & Tempo:
- Click on each digit of the time (RIGHT up, LEFT down)
- Click on the Tempo value to adjust it by a fine amount
- Click on the quarter note to adjust the value by coarser steps
- RIGHT button increments
- LEFT button decrements


Time at which the tempo will change
Click on quarter note for coarse setting
Click Right on = to toggle Fine / Ultra-Fine
Click on value for fine tempo setting
Click on arrow to insert or delete tempos
00000.00
♩ = 120.00

Ultra-Fine resolution is also available by clicking the = sign with the RIGHT button (the LEFT button on the = sign provides a Film Click display, covered in chapter 6). If this is set from the Tempo page, all tempos will globally change to Ultra-Fine mode.

Deleting A Tempo Entry:
Right Click On Arrow

When you click with the Right button, you can delete any of the settings that have been entered.

To delete a Tempo Setting:
- Right Click on the arrow next to the time/tempo you want to delete
- All settings below that will move up
  (but the time settings will remain the same)

Saving A Tempo Track:
Right Click On Destination Track

After you've set up your Tempo Track, click the Exit button. Select a destination track to store your Tempo changes. (Choose a track with your mouse and click the RIGHT button.)

The Tempo Track is now stored on the selected track and a small **t** appears next to the track number to indicate the track is a Tempo Track. If you press Play and watch the tempo indicator, you will see it change in accordance with the Tempo Map you've laid out, slowing down and speeding up on its own.

To Access A TEMPO TRACK Using Key Commands:
- Press Shift T (for Tempo Track)

Notes For Tempo Track

- *Only one Tempo Track may be active at a time, as it affects the meter display of the whole song, not just an individual track. A dialog box will inform you if you attempt to have more than one Tempo Track active. It then automatically chooses the Tempo track stored on the highest numbered track. You can mute the Tempo tracks you don't want to use so that only one is active at any given time.*

- *To Edit an existing Tempo Track, select Tempo Track from the Inspect menu and Left Click on the Track containing tempo Changes. OR you can use Instant Inspect where you Both Click on the Track Number of the Tempo Track.*

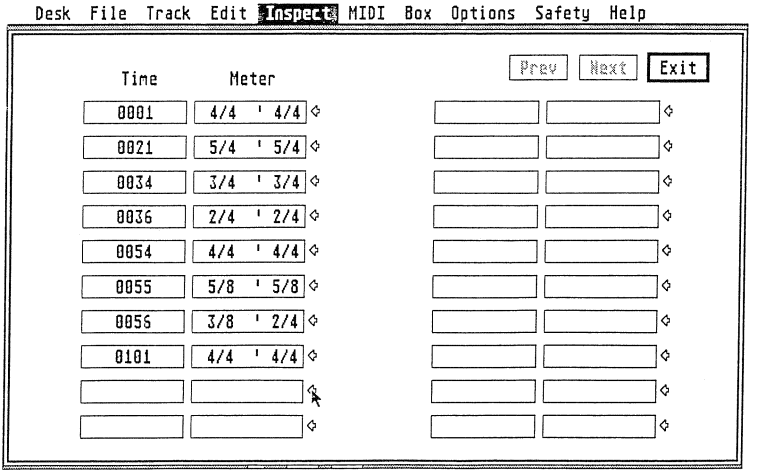
Meter Track

Another Type of Track is METER TRACK. Similar in structure to the Tempo Track, it allows you to plot out meter changes. It is only active when you're in Measures Mode (see Meter & Metronome Settings in Chapter 3 for details on setting this mode).

To Create A METER TRACK:
- Select Meter Track from the Inspect menu
- Select a Track to create Meter changes on

It is only possible to select an empty track or an already existing Meter Track. Once a track has been selected, the first page of the Meter Pages will appear.

The Meter Pages (similar to the Tempo pages) are a continuous paired-column of entry slots. Only each entry here has a Time and Meter setting. There is a total of 4 pages with 20 settings per page (80 possible Meter changes in any given song file). Along the top of the Meter Page, there are two buttons which let you scroll through the pages: **Next** and **Previous**. So if more than 20 Meter settings are inserted, the list continues on the Next page. To view those others, click on **Next**.



Inserting A Meter Entry:
Left Click On Arrow

Left Click on the small arrow to the right of each Time/Meter pair to enter a time and meter. Each time you click, a new entry will be inserted.

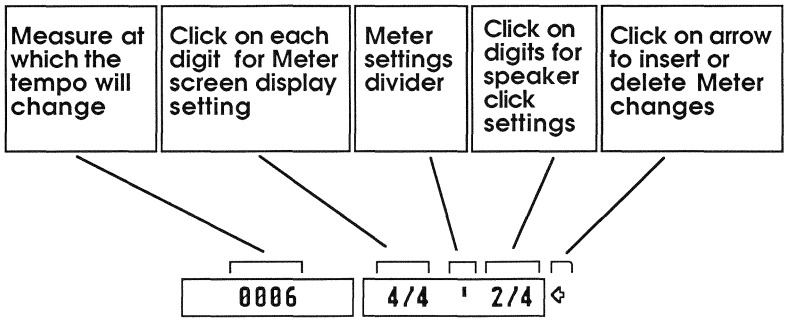
You can insert in between two existing settings or just after the last displayed setting. (When you insert between existing settings, it will insert a duplicate of that setting and move all others below that down.)

Setting Time & Meter:
Click On Each Digit

The Meter box contains two separate time signatures: the first one is the displayed time signature, the second allows you to adjust the metronome speaker output.

The Time is displayed as MEASURES (for example, the number **0006** entered into the Time box refers to measure 6, not beat 6). Another point to be made is that the Meter Track must have a starting meter; it remains at **0001** (or . . . **1** for Lead-in settings) and can not be removed.

To Edit The Time & Meter:
- Click on each digit of the time
- Click on meter values to change them
  Each digit in the numerator can be set
  Step through the denominator choices
- RIGHT button increments
- LEFT button decrements


Measure at which the tempo will change
Click on each digit for Meter screen display setting
Meter settings divider
Click on digits for speaker click settings
Click on arrow to insert or delete Meter changes
0006
4/4 ' 2/4

Deleting A Meter Entry:
Right Click On Arrow

When you click with the Right button, you can delete any of the settings that have been entered.

To delete a Meter Setting:
- Right Click on the arrow next to the Time/Meter you want to delete
- All settings below that will move up
  (but the time settings will remain the same)

Saving A Meter Track:
Right Click On Destination Track

After you've set up your Meter Track, click the Exit button. Select a destination track to store your Tempo changes. (Choose a track with your mouse and click the RIGHT button.)

The Meter Track is now stored on the selected track and a small **m** appears next to the track number to indicate the track is a Meter Track.

To Access A METER TRACK Using Key Commands:
- Press Shift M (for Meter Track)

Notes For Meter Track

- *Only ONE Meter Track may be active at a time, as the Meter Track affects the meter display of the whole song, not just the meter of an individual track. A dialog box will inform you if you attempt to have more than one Meter Track active. It then automatically chooses the Meter track located on the highest numbered track. You can simply mute the meter tracks you don't want to use so that only one is active at any given time.*

- *You can create a Meter Track while in Beats Mode, but it can not be used until Measures Mode is set on the Meter/Metronome dialog box.*

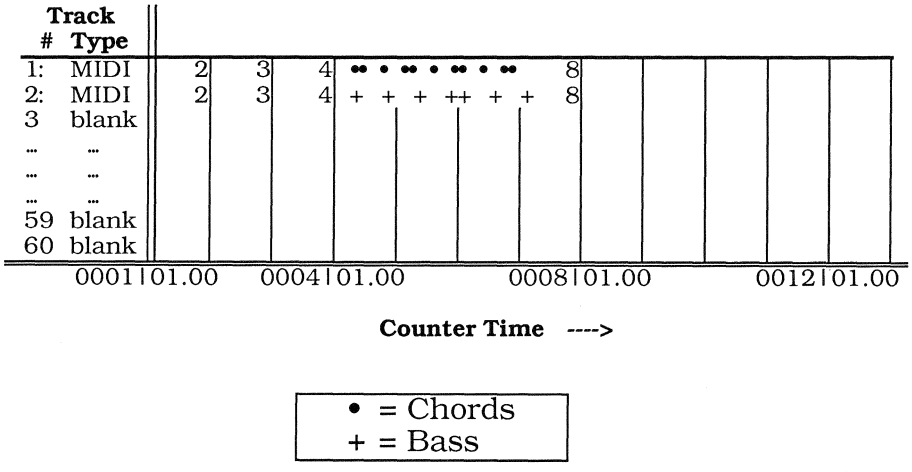
- *To Edit an existing Meter Track, select Meter Track from the Inspect menu and Left Click on the Track containing Meter Changes. OR you can use Instant Inspect where you Both Click on the Track Number of the Meter Track.*

SECTIONS

Up until this point, we've discussed the operation of MidiTrack ST as a linear recorder, using the analog multi-track tape recorder for something to compare against. Now, however, we're going to throw in a new concept and begin looking at MidiTrack ST as a Section Sequencer.

Understanding Section Mode

First we should get a basic understanding of the concept of Sections: In a general sense, every track starts from the same time value (**0001|01.00** or a set Locate Time). When you start the sequencer, all 60 tracks will play from the same beat. Think of it as Tracks in Time. Below is an example of tracks 1 and 2 recorded. When you click PLAY, you will hear 4 blank measures, and the bass and chords will start to play.



A Section is like a frame between two times: Start Time and End Time. Let's create a Section using tracks 1 and 2. (Keep in mind, no matter what we do to the Section, the original recording is still stored between measures 0004 and 0008)

Defining Sections

A Section is a two-dimensional "slice" of music. It consists of music between a start and end time, on one or more tracks. Any events that occur between those two times is in the Section (any events outside the Section are ignored unless included in another Section).

To Switch To Section Mode:
- Click on the Cash Register (to switch from Locate Time to Section Time)

There are 100 different sections you can define, from 00 to 99.

To Select A Section Number:
- Click on the Section Number digits
- RIGHT button increments
- LEFT button decrements

Below the Section Number are the Start and End Times. Adjusting the top Time sets the Start point of the Section, adjusting the lower Time sets the End point. Click on each digit to set the time.

The End Time defines the End of the Section *but is not included* in the Section. In other words, the Section begins at the Start Time and continues *up to but not including* the End Time.

To Create A Section:
- Select one of 100 Sections available (the default Section Number is 00)
- Set the Start Time for the Section
- Set the End Time for the Section
- Select the track(s) you want to include by clicking the Track Name area

Once you've set the Start and End Times, you need to select the tracks you want to include in this Section -- up to 24 tracks per Section. While in Section Mode, all the tracks included in the Section are ON (unmuted). All other tracks (except Tempo and Meter Tracks) are OFF (muted).

To Assign A Track To A Section:
- Left Click within the Track Name area
  (the track will reverse highlight, and the track will be unmuted)

To Remove A Track From A Section:
- Click on a highlighted Track (the track will be muted)

It is possible to give each of the 100 Sections a unique 8 character name.

To Name A Section:
- Select the Section number
- Shift Click in the blank name box to the right of the Section Number
- Type in an 8-character name (use Backspace and Esc when necessary)
- Click OK

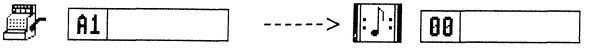
To Select A Named Section:
- Click in the Section Name box
- The next Section that has been named will be selected
- Right Clicking will scan the Sections in ascending order
- Left Clicking will scan the Sections in descending order

To Review, a Section consists of:
- Number (00 - 99)
- Name
- Start Time
- End Time
- Included Tracks

Let's step through the example diagram shown above.

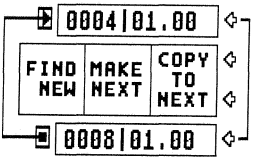
We have recorded chords on track 1, and a bass part on track 2. From the counters shown, we are in Measures Mode, both parts originally start around measure 4 beat 1 (0004|01.00) and end before measure 8 beat 1 (0008|01.00) (the end time defines the End of the Section BUT IS NOT INCLUDED IN THE SECTION). We'll call this part our Verse. What we're going to do now is create a Section, using these 2 tracks, name the Section, and then listen to it.

- Select Section Mode (eighth note with a repeat symbol on either side)

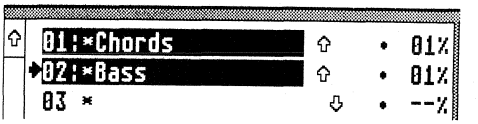


(Since Section 00 is the default, we'll use that one.)

- Define the Start and End Times for Section 00
  Start = 0004|01.00
  End = 0008|01.00

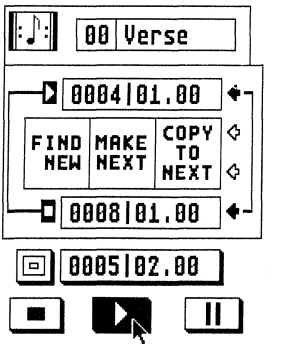


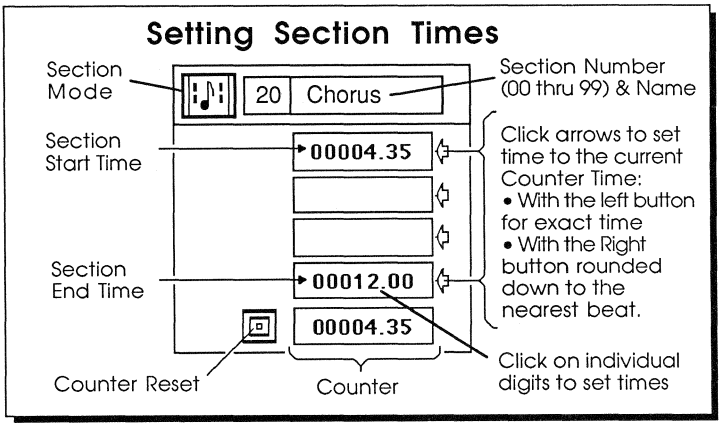
- Click on tracks 1 and 2 to include them in this Section



- Name the Section "**Verse**"

- To preview this Section, activate Auto-Locate and click on PLAY





Notes For Sections

- *In Section Mode you still have the ability to Auto-Locate by clicking on the Auto-Locate Enable Bar.*
- *Make sure the Start Time is less than the End Time. Otherwise the Section will be given a length of 00000.*

Section Mode Buttons

When you switch to Section Mode, the Register Punch-In/Out Times are replaced with three buttons which assist you in putting together Sections when in Section mode or Cycle Record Mode (described below).

FIND NEW:
Searches through the available Sections and finds the next empty Section (one with an End Time equal to the start of song, 00000.00 in Beats Mode, no tracks included).

MAKE NEXT:
Finds the next empty Section, and sets both the Start and End time of the new Section to the End Time of the previous Section.

COPY TO NEXT:
Finds the next empty Section, and copies the previous Section's settings (Start and End Times, Included Tracks, and the Section Name) to the New Section.

Notes:
Click on Section Names to switch between named Sections.

To name a Section or a Track when in Section Mode, you can only Shift Click. Both Click is not available because it conflicts with taking Tracks in and out of the current Section.

When you KEEP a Track in Section mode, it automatically includes that track in the current Section.

If you try to PLAY a Section of zero length (End Time less than or same as Start Time) it will prompt you for a Section Length (as in Cycle Record Mode -- see below).

You can reset a Section to empty (Start and End Times cleared to 00000.00, all Tracks removed from Section) by Alternate Clicking on the Section number.

Cycle Recording

Cycle Recording is a feature which allows you to create a Section by looping between two times -- a start time and an end time. When the ending time is reached, it jumps back to the beginning of the Section. Many drum machines record drum patterns in a similar fashion. The Cycle Recording found in this program adds many possibilities to that basic "pattern" concept.

To Start A Cycle In Cycle Mode:

- Left Click on the Cycle Button (below the PLAY button)
- Select a Section to record in (00 is the default)
- Click on PLAY
- A dialog box appears asking you for a Section Length (02 is the default)
- Type in 2 digits (length in measures in Measures mode)

> **Note:**
> **Whenever a dialog box asks you for a number, if you only need to change the last digit, just type that digit. Otherwise, either backspace or press Esc, then type in the number.**

- Click OK
- The current Section (00-99) is played repeatedly

Watch the counter as it goes around. When it gets close to recycling, get ready. Now play something on your MIDI instrument. The KEEP button will light up.

If you have anything in the Keep Buffer when the End Time is reached, it will be stored to the next empty track, that track will be named with a "Take" number, and it will be included in the Section. This can continue until you run out of empty tracks, or you reach the limit of 24 tracks per Section. If you don't like what you did on an earlier Take, you can remove the track from the Section by clicking on that track name, and all the while it keeps cycling. (You can easily remove the most recent Take Track -- the one the Track Pointer is at -- by pressing Undo on the keyboard. Pressing Undo a second time will include the Track back into the Section.)

When you want to stop the Cycle, click STOP. The Cycle Keep dialog appears automatically.

You have 3 choices: (1) Clean Keep, (2) Semi-Clean Keep, or (3) Rename Only.

Clean Keep:
- Renames all tracks (erases Take # names)
- Deletes all Take tracks you removed from the Section (not highlighted)
- Mixes all included (highlighted) tracks to the original Take #01 track
- If you're using a MidiPlexer, this mix will be done separately for each port

Semi-Clean Keep:
- Renames all tracks
- Deletes all Take tracks you removed from the Section (not highlighted)

Rename Only:
- Renames all tracks

Notes:
If a track is not included in the current Section when it recycles, then if you add the track to the Section you won't hear it play until it recycles again. (If you remove the track from the Section and add it back in during the same cycle, it will start playing again right away.)

You can not initiate Cycle Mode while in MIDI or External Sync.

When the End Time is reached in Cycle Mode, all Notes currently On get shut off so that there are not any "hung Notes" in the recording. This may cause the recording not to play back as desired. If so, you may want to try recording linearly for those parts.

Cycle Take Mode

When recording a Cycle, there are two ways you can look at what you are doing:

(1) You are recording a part and each time around the Cycle, you are adding to that part to make one final part; or

(2) You already have parts recorded for this Cycle and now you're at the point where you want to add a "special" part and you want to try to get it right by playing more than once, only you don't want to have to stop to hear the different parts. Alternate Take Mode will record the current track, then turn it off so it doesn't confuse you the next time around when you try another Take.

To Select A Cycle Take Mode:
- Select Cycle Take Mode from the Options menu
- Click on either Layered or Alternate Take mode

Layered Take mode KEEPs a Take and turns the track ON (most common). Alternate Take mode KEEPs a Take and turns the track OFF, and is used when doing multiple takes of the same thing; the results can then be compared.

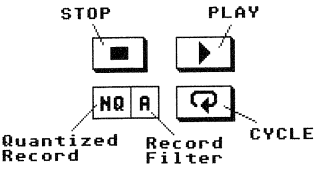
Note:
If you are in Alternate Take Mode and you STOP when none of the Take tracks are included in the Section, the Rename button will be the default in the Cycle Keep dialog so as to not inadvertently erase all of your Takes. In all other cases, the default is the button you used when you last chose a Cycle Keep type.

Quantized Record

Not all musicians play perfectly on the clock value all the time. If you recall, we discussed a function earlier in Chapter 4 called Quantizing, which moves recorded Notes so that they end up playing back on an exact tick value (nearest sixteenth Note for example).

It is possible to Quantize the information as you are recording or Quantize it later after it has been saved on a track. Quantized Record is mainly installed for, but not limited to, Cycle Mode (see Cycle Recording above). If each Take is Quantized as it is recorded, it will play back Quantized when the Cycle repeats. Quantize Record is set by clicking on the Box. Value settings are shown in the table below:

NQ = No Quantize
04 = Quarter Note
06 = Quarter Note Triplet
08 = Eighth Note
12 = Eighth Note Triplet
16 = Sixteenth Note
24 = Sixteenth Note Triplet
32 = Thirty-Second Note
48 = Thirty-Second Note Triplet



Separate Quantized Record settings are remembered for Cycle Record and linear recording.

On color monitors, values other than NQ are shown in red to remind you that you're quantizing what you're recording.

Quantized Record uses the Shift Attack algorithm (see Quantize Method in Chapter 6). While Quantized Record will work in linear recording, there is no functional difference between using Quantized Record and Quantizing after KEEPing (except for the number of steps involved), so if you prefer Move Note for linear recording, record with No Quantize and then use Quantize Track after KEEPing.

In Cycle Recording, any side effects of quantization are audible as soon as the loop recycles, so you can mute the old take and re-do it if you're not satisfied with the quantizing result.

The Quantization value is "locked in" when you re-cue, or when the loop recycles in Cycle Record. Thus in linear recording you must use one quantize amount for the whole track, while in Cycle Record each time around the loop it Keeps to a new Track and each of those tracks can be recorded with a different quantize amount.

Quantized Record references the Section Start Time, Locate Start Time, or Punch-In Time (whichever is relevant) to know where the first quantize slot falls. As long as you set these Times to exact bar or beat boundaries, you'll be OK. But if, for example, you set your Punch-In Time to 0005|02.93 and set Quantized Record to 16, Note On events will get quantized to .93, .21, .45, and .69 (instead of .00, .24, .48, and .72).

Notes For Cycle Recording

- *In Cycle Record, the automatic Keep is performed slightly before the loop recycles. Specifically, it occurs at half the quantize amount (ie, .48 at "04" to .04 at "48") before the end of the Section (if "NQ" is in effect, it occurs 4 ticks before the end of the Section). Anything you play after that point will be recorded at the "downtick" at the restart of the Section as part of the next Take.*

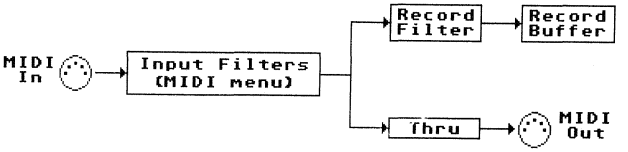
- *When a Note is played before the End of the Section and held onto around the Cycle, then the related Note Off always occurs at the End of the Section regardless of when you let go. Be aware, this may make some Notes sound like they got "chopped off".*

- *Any Quantization done while recording is permanent and cannot be undone. Thus you may want to record with No Quantize, and use Quantize Track (Edit menu) if you are unsure what Quantization setting will be most appropriate beforehand.*

Record Filter

Next to the Quantized Record setting, there is a setting which allows you to Filter MIDI Recording. You can choose to record all the types of events which are enabled in the MIDI Input Filters (see Chapter 6), just Note events, or no events at all.

The picture below shows the interaction of the Input Filters (MIDI menu) and the Record Filter, and how they affect the flow of MIDI information through the program.



There are 2 Record Modes:
(A) All Events
(N) Notes Only

There is 1 Rehearsal Mode:
(–) Rehearsal Mode

If you Left Click on the button, you will switch between the current Record Mode and Rehearsal Mode. If you Right Click on the button, you will switch between the two Record Modes.

On color monitors, the N and - settings are shown in red to remind you that you aren't recording All Events.

Record Filter Applications

There are a number of reasons why you would want to use this function.

Filtering Controllers
Recording Note Events Only (N) can keep Aftertouch Events recorded on different Takes from "fighting" each other (first one track would send an aftertouch event, then another track would send a completely different value, then back to a value from the first track, and so on).

Finding Note Assignments
You're Cycling and have recorded a Kick and Snare, and now you want to record Hi-Hat. But you don't remember what key Hi-Hat is assigned to. So turn on Rehearsal Mode (–), play keys until you find the Hi-Hat, then turn off Rehearsal Mode (A or N) and play the part.

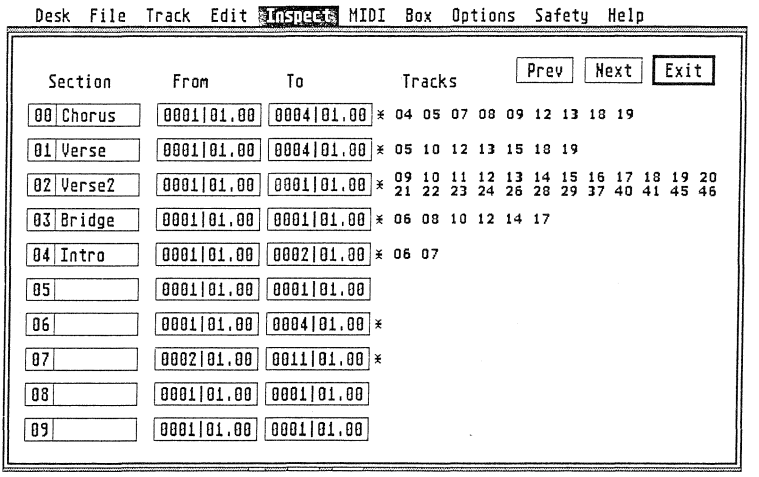
Finding Patches
Along those same lines, Rehearsal Mode could also be useful for trying different patches until you find the one that fits the part.

Rehearsing Before Recording A Take
You could use it for rehearsing with parts already recorded. If you don't want to have every Take saved to a Track, turn Rehearsal Mode on, rehearse, turn it off, and play the part right the first time.

Notes:
Don't forget the basic concept of MidiTrack ST -- it's always Recording so you don't lose a take. With the ability to "turn off" Recording (Rehearsal Mode), you may get the idea to turn it off until you finally get the part the way you want it -- but you may miss a "perfect" take. If this is your style, you may want to Record in Alternate Take Mode.

Inspect Sections

You can see all your sections by selecting **Sections** from the Inspect menu.



This screen is not an editing screen. Its purpose is to provide an overview of all defined Sections. The Inspect Sections Page shows you each Section's number, Start and End points, Section Name, and which tracks are assigned to it. You scroll through all 100 sections by clicking on the **Prev**ious and/or **Next** buttons at the top of the screen. When you've completed your review of the sections, click the Exit box to return to the main screen.

A "*" is displayed next to any Section that has one or more Tracks assigned, or has a non-zero duration.

To Inspect Sections Using Key Commands:
• Press Shift S

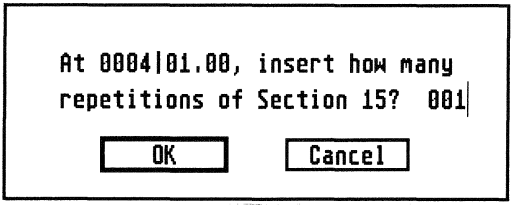
Two Uses For Sections

There are two things you can do with a Section once it is defined: (1) Glue that Section into a Track (existing or empty), or (2) Assign different Sections to play sequentially (like song mode on a drum machine) to create a Chain of Sections.

Glue In Section

After you've created a Section, you can copy that Section to any other location, earlier or later in time. As always, the original tracks are unaffected, provided you store the Glued result on an empty track. When Gluing, you can specify how many repetitions you want Glued In.

To Glue A Section:
- Select Section Mode and define or select the Section you want to Glue
- Select Register Mode (cash register)
- Set a Start Time where you want the copy of the Section to begin
- Select Glue In Section from the Edit menu
- Determine how many times you want this Section repeated
- Click OK
- Select an existing track if you want to Glue into the middle of that track Otherwise, Select an empty track (Left Click)
- Select a destination track (Right Click)

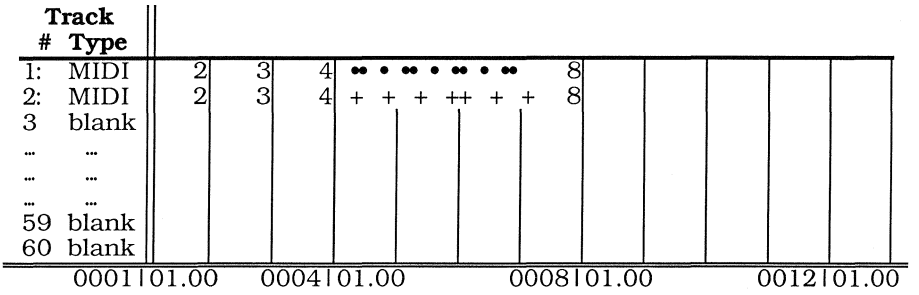


If you Glue into an existing track, the Section will be inserted at the Start Time, and the part of the track that used to start at the Start Time will be appended after all of the Glued repetitions of the Section have been inserted.

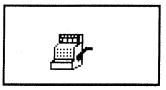
To Glue A Section From The ST Keyboard:
- Press Control G

MidiPlexer Note:
If you try to Glue A Section that contains Tracks that are on different Ports, a warning will appear. Each Port has to be Mixed separately if you want the correct Port assignments maintained, as the each of the 60 tracks can only be assigned to one Port.

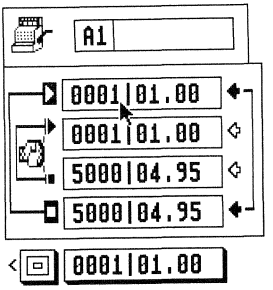
Let's use our example from and Glue the 2 tracks so they all start at 0001|01.00 on another track and repeat 3 times. If this is done right, then our **Verse** Section will play 3 times starting at measure 1, beat 1.



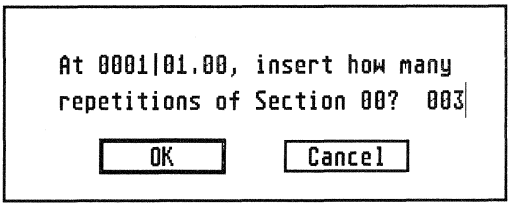
- Section **00 Verse** is already defined (from 0004|01.00 to 0008|01.00 including tracks 1 and 2)
- Select Register Mode (cash register)



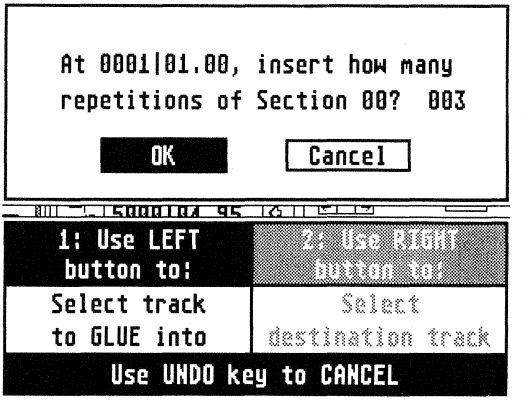
- Set the Start Time to 0001|01.00

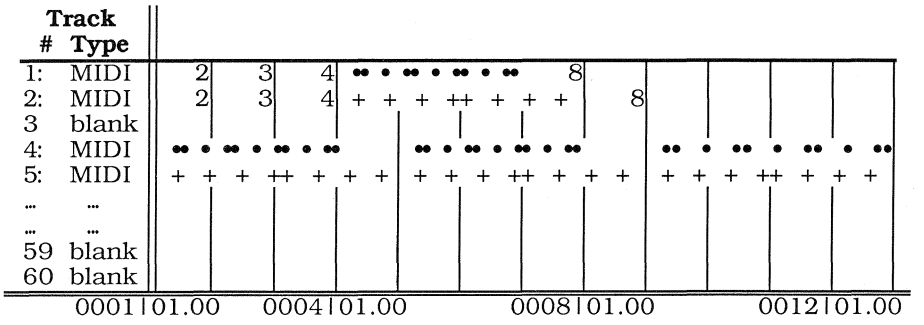


- Select Glue In Section from the Edit menu
- A the repeat prompt, type 3 to repeat this Section 3 times



- Select Track 4 as a Track to Glue Into
- Select Track 4 as a Destination Track





Counter Time ---->

• = Chords
+ = Bass

Notes For Glue Section

- *If you try to Glue an empty Section (a Section of 00000.00 length, or a Section with no tracks selected), you will get an alert saying "Nothing to glue".*
- *The Punch Mode Settings (Note vs Event -- see Chapter 6) apply the same for Glue In Section as they do for Punching.*
- *Since a Section can contain multiple tracks, but Glue In Section places the result on a single destination track, all the rules about Mixing regarding MIDI Channels apply.*

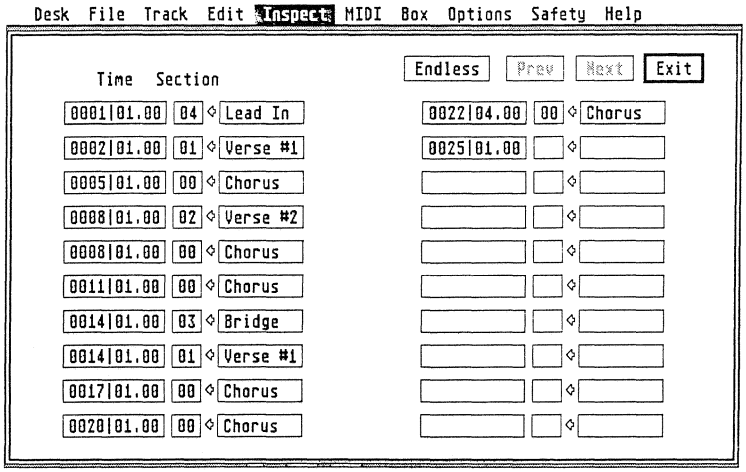
Assemble Chain

Another thing you can do with defined Sections is make them play in any order you specify. The idea of putting one Section followed by another is called Chaining Sections together or **Assembling A Chain**.

You can take predefined Sections and sequence them in any order (without altering the original tracks, and using very little memory).

To ASSEMBLE A CHAIN:
- Select Chain from the Inspect menu
- Choose a Track with the Left button

or
- Use Instant Inspect by Both Clicking on an existing Chain Track Number



The Chain Page shows paired Times and Sections (and Section Names) -- 20 different Sections per page with 10 pages available (200 Sections per Chain).

To Insert A Section:
Left Click On the Arrow

Click on the arrow to the right of the first Time/Section pair (a new page defaults blank) to insert a Section. Each time you click, a new entry will be inserted. When you insert at an existing entry, it will insert a duplicate of that entry and move all others below that down.

To add more sections, repeat this process of clicking on the arrow and editing the section numbers to assign your patterns in a correct sequential order.

To Delete A Section:
Right Click On the Arrow

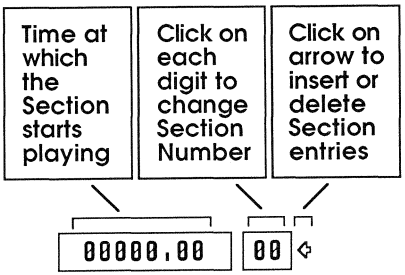
Click on the arrow to the right of the Section you want to Delete. It will remove that Section and adjust all others below it by moving them up one slot and recalculating their Start Times.

Each time you click, a Section will be deleted.

To Change Section Numbers:
Click on the Digits

To edit a Section Number, click on its digits. As you do so you'll see the numbers in the Time portion of the Chain change to reflect the length of that Section. You can also select among just named Sections by clicking in the Section name box.

The Chain Track is like a conductor -- it tells each Section when to play. The Time next to the Section Number indicates when in actual time the Section will start playing. It can not be edited. It is there for reference only.


Time at which the Section starts playing
Click on each digit to change Section Number
Click on arrow to insert or delete Section entries
00000.00
00

Endless Chains

You can create an Endless Chain by clicking on Endless. A Chain that is Endless will repeat back to the beginning of the Chain when the end is reached. If a Chain contains one Section, that Section will play continuously. If more than one Section appears in a Chain, then the whole Chain will repeat over and over.

Saving A Chain To A Track

You can scroll through all 200 entries by clicking on the **Prev**ious or **Next** boxes at the top of the screen. When you've completed Assembling the Chain, click Exit.

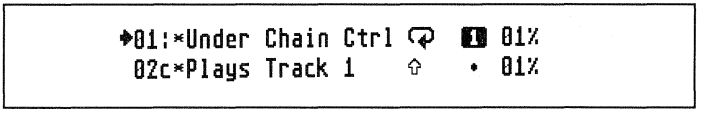
You'll now be prompted to save the Chain to a track; choose one with the track arrow and click the RIGHT button. You'll see a little **c** appear next to the track number, indicating that this is a Chain Track.

To Access A CHAIN Using Key Commands:
- Press Shift

Using Chains

Chain Control

Tracks that have been assigned to Sections will behave differently if a Chain track is active. They become "slaves" of the Chain track. When you click PLAY, any track that was assigned to a Section displays a LOOP symbol in the place of the mute arrow to denote that it is now part of a Chain. A given track either functions under control of a Chain or on its own as a linear track, but not both.



Information that is outside Section boundaries on a "slave" track is ignored.

BOTH Linear and Chain Tracks will play back at the same time. You can, for example, put the basic parts of a song in a Chain, then improvise a solo as a linear track.

In addition, more than one Chain Track can play (controlling different Sections) simultaneously. These is great for setting up odd timings or polyrhythms (ie. 3 against 4, 6 against 9), as well as different length parts playing along side of each other (ie. a one-measure drum part playing along with a 20-measure keyboard part).

Patch Change and Control Change Chasing

Patch Changes and Control Changes in tracks under Chain control are not chased (except from the start of the currently playing Section). For reliable results, it's best to put Patch Changes on linear tracks. Also put "initial" settings of Control Changes (such as if you want to ensure that MIDI Volume on each affected channel is at 127 whenever you start to play) on linear tracks instead of in the first Section.

Chain Activity
The Multi-Function Column has a third function display know as Chain Activity mode. It is only active when a Chain has been correctly assembled and stored on a track.

In Chain Activity Mode, the Multi-Function Column shows you one of three readouts for each track:

(1) If this is a Chain Track, "=00" means the Chain is currently playing Section 00.
(2) If this is a track being controlled by a Chain Track, "01c" means the Chain on track 1 is currently controlling it (" c" means that track is not under the control of any Chain *at this point in the song*).
(3) If it's neither of the above, "---" is displayed.

Aditionally, in this mode you no longer see Loop Indicators in the mute column (which usually display on Chain-controlled tracks). It will show you the actual mute status as it changes when Chains change from Section to Section.

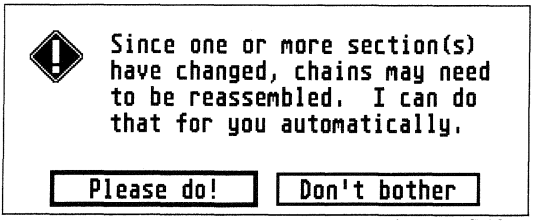
You also have the abilty to mute individual tracks in this mode (including those controlled by Chains). However, the Chain still has control of that track and may turn it back on if the next Section in that Chain asks it to play.

Chain Activity Mode is intended for analyzing what is happening with Chain control. It is not intended for use when timing accuracy is required. There may be times when playback "burps" when there is a good amount of MIDI data going by.

Using Track Offsets With Chains
You should not put negative Track Offsets on tracks which are included in Sections. Instead, put a negative Track Offset on the Chain which controls that track and add positive Track Offset to other tracks to compensate if necessary.

For example, you have a Section that starts at beat 4.00 and a kick drum plays on the downbeat (4.00). If you slide the Kick track one tick early (using Track Offset), the Kick is adjusted to start at beat 3.95, and is no longer a part of the Section. If you instead move the *Chain Track* one tick early, the whole Section plays (including the "missing" kick drum).

Automatic Chain Reassembly
When you change the Start or End Time of a Section that is used in a Chain, the Chain needs to be reassembled because the length of the Section may have changed, affecting the time when subsequent Sections in the Chain need to be played. MidiTrack ST will do this reassembly automatically, unless you have checked the Chain Reassembly Safety. When that Safety is Checked, MidiTrack ST will bring up an alert box:


Since one or more section(s) have changed, chains may need to be reassembled. I can do that for you automatically.
Please do!
Don't bother

We suggest you always click on **Please do!**. Only click on **Don't bother** if you're sure no reassembly is needed (for example: if you're going to change the Section Start and/or End Times again before you play the Chain, you don't need to reassemble twice; or if you know you changed the Start and End Times equally, keeping the length of the Section the same, you don't need to reassemble at all).

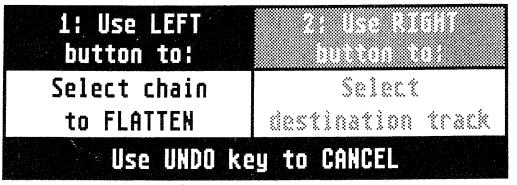
Notes For Chains

- *Sections of Length 00000.00 can not be added to a Chain.*
- *Blank sections can be used to count off time or insert rests. This is done by setting the Start and End Times* without *including any tracks.*
- *You can mute a track under Chain control only if you Mute the Chain track first (then re-cue).*
- *If you assign a track to a Section, it becomes a loop track. It can no longer play in a linear mode until you remove it from the Section and re-cue the song.*
- *If a Track is included in a Section, BUT that Section is not in a Chain, the Track Loop Indicator will not appear.*
- *Muting a Chain (turning it off) while it is playing mutes all tracks it controls but leaves them under Chain Control. Turning the Chain back On will unmute any tracks it controls (if you turned it off while playing).*
- *Nested Chains are possible, as long as the innermost Chain comes first (in the numbering order of tracks) and the outermost Chain comes last. For example, Chain 12 can control Chain 5, but not the other way around. Experiment with this only after you understand all other aspects of Chain behavior.*
- *To Edit an existing Chain Track, select Chain from the Inspect menu and Left Click on the Track containing a Chain. OR you can use Instant Inspect where you Both Click on the Track Number of the Chain Track.*

Flatten Chain

After you've created Sections and assigned them to Chains, you may want to convert the Chain track into one long linear track. This can make it easier to edit one part which has been constructed from many smaller Sections.

To FLATTEN a CHAIN:
- Select Flatten Chain from the Edit menu
- Select the chain you want to Flatten with the LEFT button



- Once you've chosen the Chain track it will reverse highlight
- Point to the track where the Flattened chain will be stored
- Click with the RIGHT button

A Chain Track tells Sections when to play. A Flattened track plays exactly the same as the original Chain, but the notes actually appear on the track at the time you hear them.

All the events from the Sections contained in the Chain track are mixed. You can now mute/unmute the track normally, Glue Sections of the new track, or make any necessary edits.

If you have the Endless Chain option activated in the chain track you're flattening, true endlessness would make you run out of memory. Therfore a dialog box appears asking you how many times you want to repeat the chain. Type in the amount (from 001 to 999) you want and click OK.

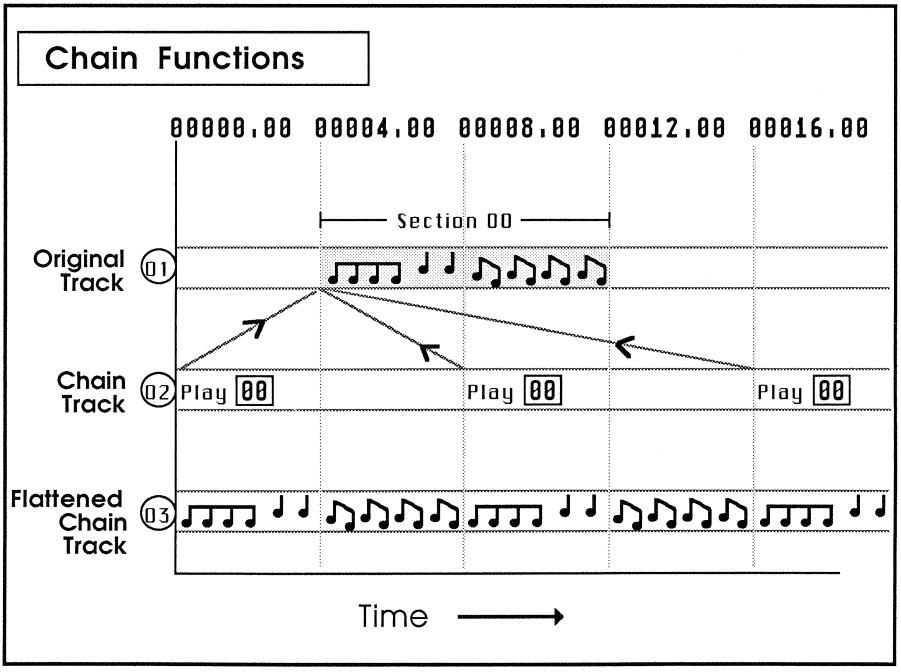
To Flatten A Chain Using Key Commands:
- Press Control F

Notes For Flatten Chain

- *The Punch Mode Settings (Note vs Event -- see Chapter 6) apply the same for Flatten Chain as they do for Punching.*

- *Since a Section can contain multiple tracks, but Flatten Chain places the result on a single destination track, all the rules about Mixing regarding MIDI Channels apply.*

MidiPlexer Note:
If you try to Flatten A Chain that contains Sections which contain Tracks that are on different Ports, a warning will appear. Each Port has to be Mixed separately if you want the correct Port assignments maintained, as the each of the 60 tracks can only be assigned to one Port.



CHAPTER 6
GLOBAL FEATURES

In This Chapter:

- Global Tempo
- Register Mode
- Global Transpose
- Patches & Channel Settings
- SysXpress Accessory
- AutoInject
- Multiple Instrument Setups
- MIDI Mode Messages
- Turn Off Sustaining Notes
- MIDI Input Filters
- Punch Method
- Early Amount
- Rounding Amount
- Quantize Method
- The Safety Menu
- Key Command Macros
- Control Change Names
- User Preferences File
- Naming A Song
- AUTOLOAD / AUTOPLAY Files
- New Song
- Initialize Song

Key Words:

- Film Click
- Global
- Local ON/OFF
- Mono Mode
- Omni ON/OFF
- Patch
- Poly Mode
- Register

Global features are functions which affect the overall performance of the program. Some basic functions, such as Tempo adjusting and the Meter/Metronome option, have already been covered earlier in the manual. Information about the Meter map didn't make sense without introducing the Meter/Metronome option. This chapter covers the remaining Global features.

GLOBAL TEMPO

Ultra-Fine Tempo Settings

The settings for the Tempo are a rigid group of numbers (based on Film Click references -- see Film Click, next section). There is a way to get 4 times the accuracy using the Ultra-Fine Tempo setting. This Global feature has already been discussed in Chapter 3.

To Set Ultra-Fine Tempo Resolution:
- Point to the = sign and click the RIGHT button

To Return To Normal Resolution:
- Click the RIGHT button on the = sign a second time

For Coarse Adjustment	• Click on the Quarter Note OR • Press Shift > or Shift <
For Fine Adjustment	• Click on the Tempo Value OR • Press > or <

- To Increase the Tempo: Click the RIGHT button OR Press the > key
- To Decrease the Tempo: Click the LEFT button OR Press the < key

Film Click Display

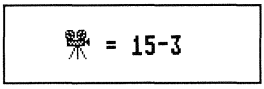
If you use the LEFT button while pointing at the = sign, you will see a small movie camera icon replace the quarter note and several numbers replace the standard beats-per-measure (BPM) values. This is a tempo mode called Film Click used primarily by film composers.

In the "old days", film composers didn't have the luxury of working with video or SMPTE. Instead, a method was worked out where the actual film reels had holes notched in their sprockets and doing that would make audible clicking sounds as the film rotated around the projector. How many frames apart these holes were placed would determine what the tempo was for a film cue. Composers often conducted their scores while watching the film. Having a click track prepared let the composer work with a crude form of synchronization.

So if you knew the length of a cue and could establish where your visual hit points were against time, then by working with a manual known as the "Click Book", you could produce a film score. The "Click Book" is ALL possible film click tempos (plotting feet of film against time).

Film click is still used today and demands very precise and accurate timing. Unfortunately, when you convert Film Click over into BPM, you usually don't get round numbers. A click of 11-1 translates to a tempo of 129.44, for example.

It may seem that half a beat every minute is not that important. However, after 4 minutes, you could be off by as much as 2 beats. And that means your music may end at the wrong time. If it's supposed to cut off **precisely** when the little girl stares up into her father's eyes to whisper "I love you, Daddy", timing becomes crucial. If the musicians play the final 2 beats right across the "...love you..", you can bet the director is not going to be satisfied.



To Access The Film Click Display:
- Point to the = sign in the Tempo icon area
- Click the LEFT button
- To return to normal display, click LEFT on the = sign a second time

To Access Ultra-Fine Resolution:
- Go into Film Click Display (LEFT button)
- Click on the = sign again only this time with the RIGHT button
- Return to normal by repeating the RIGHT click

Ultra-Fine while in Film Click mode is displayed as a standard Film Click value followed by +0 to +3. From this you can see that Ultra-Fine resolution has 4 times as many tempo settings as normal resolution, spaced evenly between the standard Film Click tempos.

Note:
MidiTrack ST provides exact film click values for tempo since they are needed for external synchronization. Internal synchronization requires less accurate tempo precision, and so the given BPM values that match the film click values are usually acceptable.

REGISTER MODE

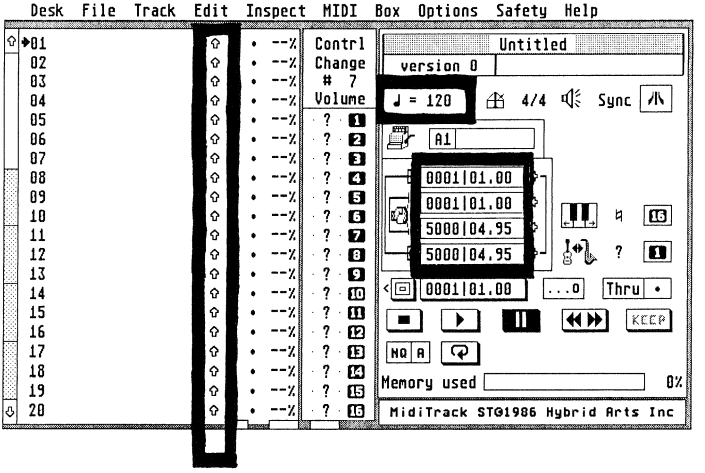
There are 27 Registers that store basic setup information. This works similar to group assignments on an analog multi-track recorder, and covers additional information as well.

The following information is stored in each Register:

[1] Track Mutes (ON/OFF)

[2] Current Tempo Setting

[3] Time Settings:
- Start
- Punch-In
- Punch-Out
- End



To Select A REGISTER:
- Point to the Register Number to the right of the Cash Register (initially set to **A1**)
- Click on the letter to cycle through banks **A**, **B**, and **C**
- Click on the number to access Registers **1**-**9** within the current bank

Once you have a Register selected, set up the needed values. Keep in mind, not all values need to be set in each Register; just the ones you need. *(If you change any of these settings without selecting a Register, you are essentially making changes to Register **A1**).*

To Set Up A Register:
- Click on the desired Track Mute settings and/or
- Set a Tempo value and/or
- Set Start / End Times and/or
- Set Punch-In / Punch-Out Times

The Information is *automatically* stored in the current Register.

To Name A Register:
- Select the Register you wish to name
- Shift Click or Both Click on the Register Name
- Type in up to 8 characters (use Back Space and Esc when necessary)
- Click OK (or Press Return)

To Copy Settings From One Register To Another:
- Shift Key copies Tempo Settings
- Control Key copies Mute Settings
- BOTH keys copy Tempo and Mute at the same time
- *Press and Hold* the appropriate key(s) described above
- Select a Register (by clicking or pressing the appropriate Key Command)

Using The ST Keyboard To Select A Register:
You can access any of the 27 Registers using the function keys on the ST keyboard (you still have to use the mouse along with Control and/or Shift keys if you want to COPY Tempo or Mute Settings from one Register to another):

Press These Keys...	**To Access These Registers...**
Shift F1...Shift F9	**A1...A9**
Control F1...Control F9	**B1...B9**
Control Shift F1...Control Shift F9	**C1...C9**

Examples Of When To Use Registers

Live Performance
If you Mix all tracks for each song down to one track, it is possible to have an entire set in one song file (memory providing). If this has been done, then it is possible to create a Song Set Switcher. The setup may look something like this:

Register A1:
Track 01 ON (assuming your first song is on track 01)
All other tracks off
Tempo set to 133 (assuming that's the tempo of your first song)

Register A2:
Track 02 ON
All other tracks off
Tempo set to 120

Register A3:
Track 03 ON
All other tracks off
Tempo set to 90

This process continues until you run out of memory, songs, or Registers. If you use one track per song, then when you select Register A6, for example, the 6th song in your set is ready to be played and the tempo should be correct for that song.

Song Editing
This example sets up Registers to use as pre-set times in a song. For example, lets say you record a Verse from 00004.00 to 00032.00, and a Chorus from 00032.00 to 00100.00. They are in a rough form at this point. The Verse needs work between beats 20 and 30; the chorus could use a touch up between 60 and 90. Let's set up our Registers.

Register A1:

Set Start Time to	00004.00
Set Punch-In Time to	00020.00
Set Punch-Out Time to	00030.00
Set End Time to	00032.00

Register B1:

Set Start Time to	00032.00
Set Punch-In Time to	00060.00
Set Punch-Out Time to	00090.00
Set End Time to	00100.00

As you're working on the Chorus (Register B1), you get a great idea for the Verse. Quick. Switch to Register A1, and activate Auto-Locate and Punch. You're there.

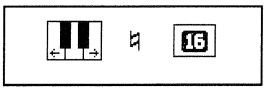
Tempo Settings
This is also effective for Tempo settings. If you set different tempos in a number of different Registers, then you can see which tempo works best for your song.

Recording at a slower tempo may make playing difficult parts easier. Use one Register's tempo for recording and another for playback. Sometimes slowing the tempo down to a crawl is a good way to audition a part that was originally recorded fast. You can also set one Register to a very fast tempo such as 480 BPM to provide an "audible fast forward".

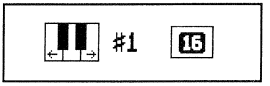
These are just a few good ideas for using Registers. The possibilities are unlimited. Try your own.

GLOBAL TRANSPOSE

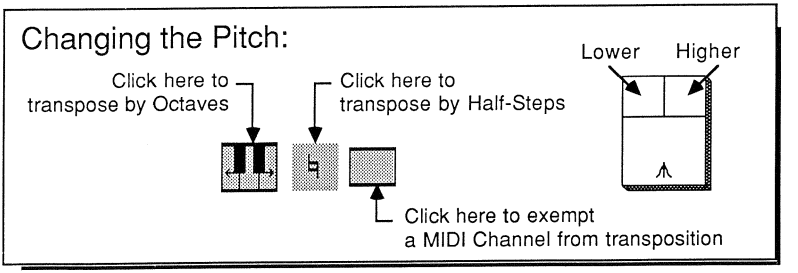
You can instantly transpose the key of the entire song by a range of 4 octaves, up or down by half-steps. This is a real-time control, meaning you can alter the key while the song is playing.



To Transpose The Entire Song:
- Point to the accidental symbol (it defaults to a Natural sign)
- Click the Right button
- The accidental now becomes a sharp with the number 1 next to it



To Set The Amount Of Transpose:
- Click the Right button to increase the overall key by a half-step
- Click the Left button to decrease the overall key by a half-step
- A Sharp accidental appears when you are above the original key
- A Flat accidental appears when you are below the original key
- The value shows you how far away from the original key you've transposed
- If you click the Transpose icon, you can transpose by an octave at a time


Changing the Pitch:
Click here to transpose by Octaves
Click here to transpose by Half-Steps
Lower
Higher
Click here to exempt a MIDI Channel from transposition

To GLOBAL TRANSPOSE From The ST Keyboard:

- Press the RIGHT ARROW Key to raise by a half-step
- Press the LEFT ARROW Key to lower by a half-step
- Press the Shift RIGHT or Shift LEFT ARROW Keys to transpose by an octave

Directly to the right of the Transpose indicator is a box with a MIDI channel number in it (the default is 16). Whatever MIDI channel is assigned in this box ***IS NOT affected by global transposition.***

Most drum machines, while having built-in sequencers, can also be triggered via MIDI (like other instruments). When you use them this way, each drum sound is typically assigned to a particular note. If you were to Transpose a drum track, the wrong drums will play.

For example, let's say a kick drum is assigned to F1 and a snare to G1. If you Transpose up by 2 half-steps, the snare will play wherever the kick used to (some other drum sound may also play wherever the snare played previously).

By setting one MIDI channel to not be affected by Global Transpose, you can tune your drums to this channel and they will not be shifted with the rest of the music.

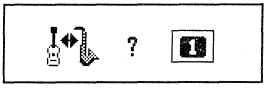
PATCHES & CHANNEL SETTINGS

A Patch is the group of parameters which make up a sound in your MIDI instrument. It is possible to change from one patch to another and record that change on a Track.

Remote Patch Changes

MidiTrack ST lets you change patches on any instrument in your setup. Patch changes can be monitored from the computer, and can also be sent. The reasons for using the Patch Change feature of MidiTrack ST: (1) it is a convenience so you don't have to walk around the room to set your different instruments, (2) you can get a view of different instruments' patch settings at any given time, and (3) you can record and KEEP the current patch setting to a track.

The Patch Change icon is directly below the Transpose icon. MidiPlexer users should note the addition of output selection (A, B, C, D).



To Change Patches:
- Select the MIDI channel you want to affect (defaults to channel 1)
- Point to the question mark (?) to the RIGHT of the Patch icon and click
- A number appears which represents the corresponding patch on your instrument(s) tuned to the selected MIDI channel
- The RIGHT button increments by one patch: the LEFT decrements
- Click on the Patch icon (Sax/Guitar) to jump 8 patches

As you increase or decrease the number, you will see the patches automatically change with what shows on the screen. By pointing and clicking directly on the Patch icon, you can jump 8 patches at a time. The patch number will be shown as a value between 0 and 127.

To CHANGE PATCHES Using Key Commands:
- Press (or) which are the PARENTHESES KEYS (numeric keypad)
- The) key increments by one patch
- The (key decrements by one patch
- Press Shift (or) to jump 8 patches at a time
- Press Control (or) to change the patch-change MIDI channel number

Recording Patch Changes

As we've discussed, most MIDI instruments have more than one patch stored inside them. One sounds like a trumpet, another like a flute. Using MidiTrack ST, it is possible to change from one patch to another, in real time (as the sequence is playing).

A Patch Change Event is similar to all other events; it happens at one specific time, it can be assigned to any one of the 16 MIDI Channels, and can transmit a value between 0 and 127.

There are 3 ways you can store a patch change on a track:

(1) Press the patch on the MIDI Keyboard (if applicable -- see below)
(2) Set the patch number and press **Control Shift Alternate P**
(3) Insert a Patch Change using the Event List Screen

From The MIDI Keyboard
Some manufacturers' MIDI Keyboards send patch change information just like they send Note On and Note Off.

If this is the case with your controller keyboard, when you press a patch, the KEEP button will enable. When this happens, there is now a patch from the MIDI Channel that keyboard is set to in the KEEP buffer. Just like any other recorded events, select a track to store that one event, and click KEEP.

This can be done in Step Time or Real Time.

From The Atari ST Keyboard
There is a Key Command that allows you to simulate the above Patch Change. The Remote Patch Changer plays a role in this action.

First, set the Remote Patch Changer to the desired MIDI Channel on which you want the patch to be sent. Now set the patch number to the desired patch (if the Keyboard for that MIDI channel is connected, the patches will be changing as you click).

Now the key. Press **Control Shift Alternate P** in that order, all at the same time. This Patch Change Event gets saved at the current Counter Time.

This method can also be done in Step-Time or Real-Time.

From The Event List Screen
As you will see in upcoming chapters, there are other ways to edit MIDI Events once they are stored on a track. One of the ways allows you to Insert any Event at any given time. And you can change the time afterwards.

Enough about Text Editing. The function we are concerned with is Inserting a Patch Change. This can be inserted on an existing or empty track.

To Insert a Patch Change Using the Event List:
- Select Event List from the Inspect menu.
- Choose a track to edit (Left Click)
- Scroll to the exact time you want to Insert
- Click on **Insert**
- Click on **Patch Change**
- Select a MIDI Channel
- Click OK
- Type in a Patch Number (0-127)
- Click OK

The Patch Change will be Inserted. If you want to move the Event, click on the time setting and click on the **Insert/Delete Arrow** with the Left button.

See Chapter 8 -- Text Editing for details on how to Insert an Event.

Channel Settings

Channel Settings consist of three parts: (1) Patch Numbering, (2) Velocity Clipping, and (3) Apply MIDI Volume to Velocity.

Patch Numbering

There are a total of 128 patches defined in the MIDI spec, numbered from 0 to 127. Most of the standard instruments stay within these boundaries. (Patches outside this limit are usually accessed using System Exclusive, provided your keyboard allows Sys Ex access to those Patches.) They all start with patch number 0. Depending on how many patches are contained in the instrument, they go up from there. Since most people don't start counting at 0, the manufacturers decided to number the patches in their own way.

For example, a DX7 is numbered from 1 to 32 internal (and an additional 1 to 32 if the cartridge is being used), while a D-50 has 64 sounds along a 11-18, 21-28,...81-88 matrix. MidiTrack ST allows you to configure the patch numbers which appear on your screen to match the way your instrument is set.

To Set PATCH NUMBERING:

- Select Channel Settings from the MIDI menu
- Click on the MidiPlexer Port (if using a MidiPlexer)
- Click the MIDI channel that matches the channel of your instrument

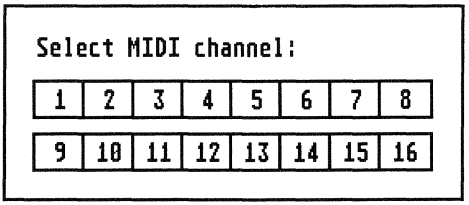
- There are four patch numbering parameters you can set:

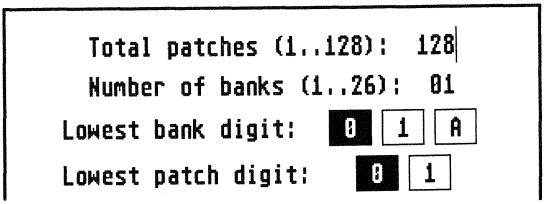
[1] Total number of patches available from your instrument

[2] Total number of banks defined in your instrument

[3] Lowest bank digit

[4] Lowest patch digit





By adjusting these parameters, you can make MidiTrack's patch display match that of your instrument. The following tables compare the patch numbering for the Yamaha DX-7 and the the Roland D-50:

DX-7 Patch Set Up	
Total number of patches:	32
Number of banks:	1
Lowest bank digit:	0
Lowest patch digit:	1

D-50 Patch Set Up	
Total number of patches:	64
Number of banks:	8
Lowest bank digit:	1
Lowest patch digit:	1

If you count all of the patches on the instrument, this makes sense. On a DX-7, there is 1 bank of 32 sounds numbered 1 through 32. The lowest patch digit is 1. (Since there is only one bank, the bank number won't be displayed, so the **Lowest Bank Digit** is irrelevant.)

In a D-50, the banks are not numbered straight; they start at 11, go to 18, and then jump to 21. Figuring this out, there are 8 banks of 64 sounds. Because the patches start at 11, the lowest bank digit is 1 and the lowest patch digit is 1.

If you want to include the patches that are found on the cartridge of a DX-7, then the table could look like one of the following:

Set up #1 for a DX-7 Cartridge	
Total number of patches:	64
Number of banks:	1
Lowest bank digit:	0
Lowest patch digit:	1

Set up #2 for a DX-7 Cartridge	
Total number of patches:	64
Number of banks:	2
Lowest bank digit:	A
Lowest patch digit:	1

In example #1, the numbers will count 1 through 64 (the first sound in the cartridge is at patch 33). The second example allows you to switch between internal and cartridge by clicking on the letter (A internal or B cartridge).

Try setting up your own configurations.

Using Remote Patch Changes with Patch Numbering
The Remote Patch Change function works a bit differently on channels where you have Patch Numbering set up.

If you set up more than 1 bank/less than 11 patches per bank:
- Click on the bank digit to increment/decrement by banks
- Click on the sax/guitar icon to increment/decrement by banks
- **Shift Numeric (** or **)** increments/decrements by banks

If you have 11 or more patches per bank:
- Click on the sax/guitar icon to increment/decrement by 8 patches

If you have only 1 bank, it works the same is if you don't have Patch Numbering set up:
- Click on sax/guitar icon to increment/decrement by 8 patches
- **Shift Numeric (** or **)** increments/decrements by 8 patches

Velocity Parameters
It is possible to clip velocity input at a maximum Velocity value (DX-7 or applicable instruments which don't expect to receive values higher than the set clip value), and Applying MIDI Volume to Velocity.

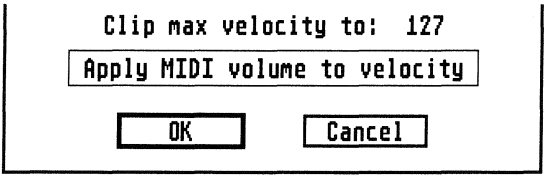
VELOCITY CLIP
The maximum velocity sent in MIDI IN can be clipped at a value other than 127. This is useful for instruments not expecting to receive values higher than the set clip value.

For example, many Yamaha DX family instruments don't send high velocities (above 118), and thus a DX-7 or compatible module may sound strange if you send higher velocities to it. The velocity number you specify in this dialog will be substituted any time the program tries to send a higher velocity (velocities lower than this will not be affected).

MIDI VOLUME MAPPED TO VELOCITY
This setting switch is good for instruments that don't respond to MIDI Volume but do respond to Velocity (most drum machines are like this).

Using the Control Column, it is possible to adjust velocity in real-time as if it were Volume. Keep in mind, this depends on the patch itself; if it is only set up to produce to a minimal variation over the range of Velocity values, it may appear to not work as desired (please find a different patch that will work or edit the patch using your synthesizer or GenEdit).

Note:
MIDI Instruments respond more consistently to MIDI Volume than to Velocity. So you may have to record a bigger Volume range (ex. move the Fader further) than expected when mapping Volume to Velocity.



SysXpress Accessory

MidiTrack ST comes with a desk accessory which allows you to load Hybrid Arts' GenEdit or GenPatch ST files without leaving the program. GenPatch ST is a generic patch storage program that will store patches from a variety of MIDI instruments. GenEdit is a universal editor/librarian that lets you store, organize, and edit patches from a variety of MIDI instruments. If you store your patches using GenEdit or GenPatch ST, then you'll find this accessory invaluable as your entire sound catalog is always accessible from your sequencer.

To Use The SysXpress Accessory:

- Place the disk containing your GenEdit or GenPatch file in the current drive
- Select SysXpress from the Desk menu
  (It will only be there if you properly load your BOOT disk)
- SysXpress identifies itself at the top of the screen, and the File Selector appears on the screen
- The directory lists all files (including GenEdit or GenPatch Files) that are on the current disk
- Select the GenEdit or GenPatch File to load by clicking on the name of that file
- The File will then either prompt you for a MIDI channel to send on, or automatically start transmitting

Be sure that the instrument you're going to transfer the sounds to is properly prepared (correct MIDI channel, write protect off, etc). Refer to the particular instrument's owner's manual for specific transfer instructions.

- Some files may require additional information such as which MIDI channel to transmit on. **If this is the case, type in any needed information then Press Return or click the Left button anywhere.** (Press Undo or click the Right button to cancel.)
- The SysXpress Accessory always numbers patches from 0 to 127

The mouse becomes a MIDI Plug telling you to wait a moment while the bank is being transmitted.

Your instrument is now loaded with the new sounds.

- Once the file has been transmitted, the File Selector will appear again
- Click OK to re-send the same file
- Select another file and click OK to send it
- Click Cancel to exit the SysXpress Accessory

SysXpress Desk Accessory Notes

- *MidiTrack ST will not store patches or banks of patches for you as GenEdit or GenPatch Files. The SysXpress Accessory is simply a convenient method of utilizing and integrating Hybrid Arts' products with one another.*

- *CZ-Android and DX-Android Files can be converted to GenPatch ST format. Once they are, you can transfer them using SysXpress Accessory WITHOUT NEEDING GENPATCH ST. The two different conversion programs are included with the Android programs.*

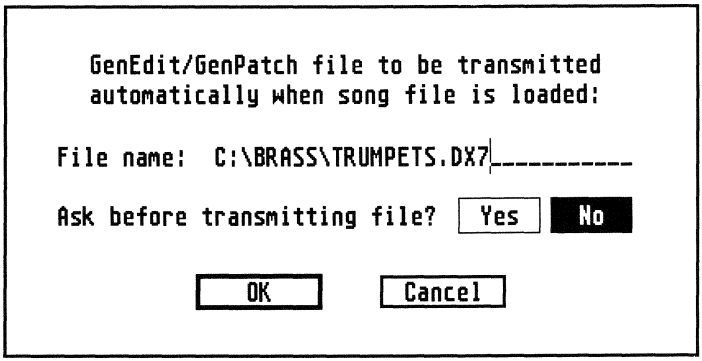
- *Also, because this is a Desk Accessory, the patches can be loaded from within any program. For example, say you're writing something using a word processor and you want to practice something on your instrument using different sounds than the ones currently in it. If the SysXpress Accessory is loaded correctly, you can load new sounds without having to Quit your word processor.*

More information about the SysXpress accessory is in the **SYSXPRSS.DOC** file on your Master Disk. From the desktop, double-click on this file and then click Show to view it on the screen (or Print to print it).

Auto Inject

Auto Inject is a function that is similar to the **SysXpress Accessory**; it loads different patches into your instruments without having to quit MidiTrack ST. The advantage of Auto Inject is the basis of its name -- the patches are automatically loaded into your instruments at the same time you load the song file.

To Activate Auto Inject:
- Select Auto Inject File from the Options menu
- A dialog Box Appears:



- Type in the name of the GenEdit or GenPatch file to be transmitted automatically when the current song file is loaded

There are several ways you can specify where from and how to load the file:

filename.ext	with no drive or path specification, it will always load from the same drive and folder as the song file
\folder\filename.ext OR **\filename.ext**	with a path (folder) specification but with no drive specification, it will load from the same drive as the song file but always from the predetermined folder (use **\filename.ext** if the file is to be loaded from the root directory)
B:\filename.ext	with both a drive and a path
A:\folder\filename.ext	it will always load from that predetermined drive and folder or root directory (always use the \ after the drive letter and colon if the file is on the root directory)

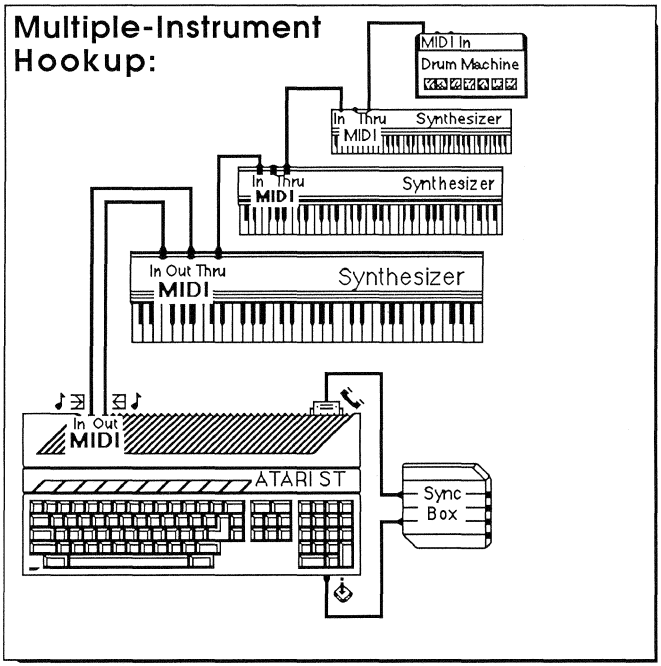
- Select YES if you want to send the file automatically some of the time but not send it other times (a prompt appears to Cancel the send)
- Select NO if you want to send the file automatically every time you load the song.
- Click OK

This information will now be saved along with the song file. ***Be sure to save your song with the new GenEdit or GenPatch File name attached to it. The NEXT time you load the song file, the GenEdit or GenPatch file you specified will be sent out automatically.***

MULTIPLE INSTRUMENT SETUPS

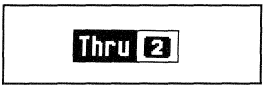
Using The Thru Function

If you are using more than one MIDI instrument (or multi-timbral instrument) with MidiTrack ST, you may want to play and hear each sound using the Thru feature.



To Turn The Thru Function ON or OFF:
- Click on the Thru box
- If Thru is highlighted (inverse), then Thru is active.
- If Thru is not highlighted, then Thru is inactive.

Any instruments connected and tuned to the MIDI Channel shown (channel 2 in the example) can now be played from your main keyboard through the computer.



If you set your instruments to different MIDI channels, you can adjust which one(s) you'll play by adjusting the Thru Channel. MIDIPLEXER users take note of the additional output assignment (A, B, C, D).

To Adjust The MIDI Channel Number:
- Click on the MIDI channel number shown to the right of the word Thru
- Click the RIGHT button to increase it
- Click the LEFT button to decrease it

Using the example setting above, if you tune an instrument to MIDI Channel 2, you'll be able to hear both your main instrument play together with the other one set to MIDI channel 2.

Unchannelized Thru
There is one setting which causes the MIDI channel number to disappear. This represents a feature allowing you to send MIDI information *from* a controller that can send more than one MIDI channel at a time *Thru to* instruments set to those separate channels.

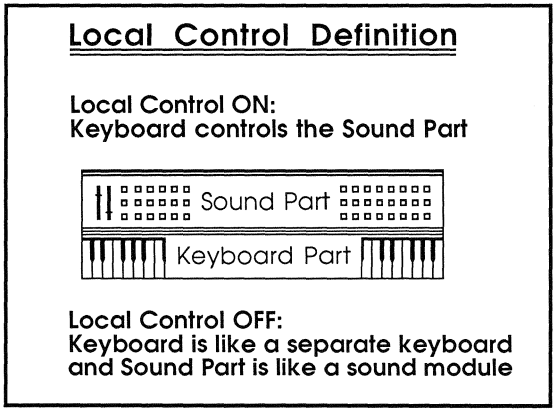
Example 1: Using a keyboard that is capable of sending more than one MIDI channel at once, you can control different instruments set to corresponding MIDI channels.

Example 2: Guitar controllers often send a different MIDI channel for every string. In this case, a useful application would be to use a synthesizer set to MONO Mode where each voice corresponds to a different string.

Local Control

Local Control ON / OFF is a MIDI function which allows you to separate your keyboard from its "electronic sound generating" section. (This function is not available on all instruments.)

Instruments capable of turning Local Control OFF are equivalent to having two parts: (1) electronics and (2) a keyboard; both of these sections packaged in one unit.


Local Control Definition
Local Control ON:
Keyboard controls the Sound Part
Sound Part
Keyboard Part
Local Control OFF:
Keyboard is like a separate keyboard
and Sound Part is like a sound module

Turning Local Control OFF will separate the electronics from the keyboard. This allows the sound part to play as a "module" while the keyboard is triggering other instruments.

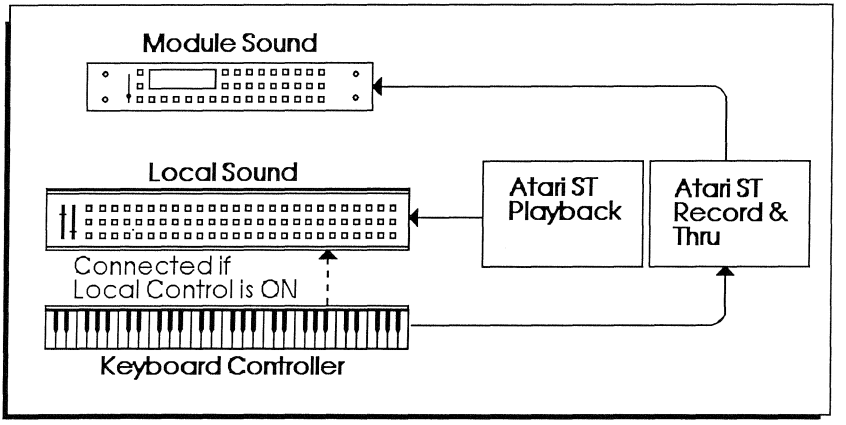
An example might make this more clear:

You have a keyboard (containing the Local ON/OFF function) set to Receive and Send on MIDI channel 1. You also have a rack module instrument set to Receive on MIDI channel 2.

You record a bass part that uses the sound from the keyboard. You now want to record a melody that uses the sound from the module.

While the sequencer plays the bass part, you play the melody part on the keyboard, using the Thru function to hear the melody on the module. But, with Local Control ON, you also hear the melody on the keyboard's sound part because it's internally connected (Local ON).

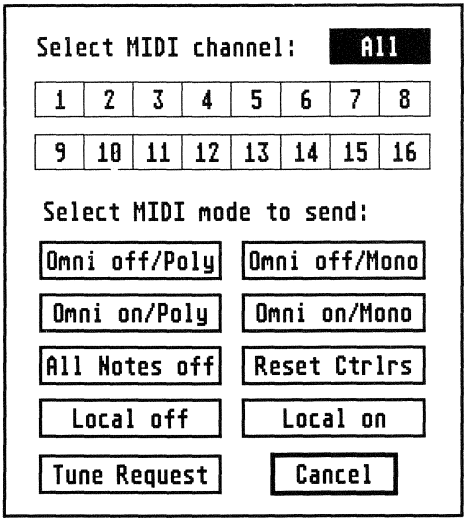
Solution: set the keyboard to Local Control OFF. This effectively separates the two parts of the keyboard. Now when you play the melody, the keyboard only triggers the module sound. You can then record the module part at the same time the sequencer plays the sound part of the keyboard.



MIDI MODE MESSAGES

MidiTrack ST allows you to send specific MIDI messages to your instruments. These messages are general modes included in the MIDI spec.

To Send MIDI Mode Messages:
- Select Send Mode Msg from the MIDI menu
- A dialog box appears with all the messages you can transmit
- First choose the MIDI channel on which to send the message (**All** will send the message on all MIDI channels)
- Click on the message to send it



There are 8 Mode messages you can transmit:

Omni Off/ Poly Your instrument will receive MIDI information only on the channel it is tuned to, and functions in Poly mode.

Omni Off/ Mono Your instrument will receive MIDI information only on the channel (or a group of consecutive channels) it is tuned to, and functions in Mono mode.

Omni On/ Poly Your instrument will receive MIDI information on any channel, and functions in Poly mode.

Omni On/ Mono Your instrument will receive MIDI information on any channel, and functions in Mono mode. (This Mode is in the MIDI spec and is here only for completeness.)

All Notes Off Turns off notes, especially ones that may be "stuck" on. This is recognized by some but not all instruments, so it may not appear to function if your instrument doesn't recognize this MIDI command.

Reset Controllers Resets all controllers on the instrument to their default settings. This Mode Message was added to the MIDI Spec only recently, so few (if any) instruments recognize it yet.

Tune Request Some analog synthesizers require tuning of their oscillators periodically. Sending a Tune Request causes this function happen. (Not all analog synthesizers recognize this message, however.) *This affects ALL channels, regardless of the channel selected.*

Local Off This electronically separates your keyboard keys from its sound generator. (Only available to keyboards containing this parameter. See description above -- Local Control.)

Local On This re-connects your keyboard to its sound generator. (Only available to keyboards containing this parameter. See description of Local Control above.)

TURN OFF SUSTAINING NOTES

Clicking STOP (pressing RETURN) shuts off any sustaining notes. If you want to do this without stopping, press Control Shift X (available as a key command only).

A good example of a use for this might be if you are performing a SET and you want to stop the SET at the current song, immediately, but you don't want the SET to continue (which is what it will do if you click STOP or PAUSE).

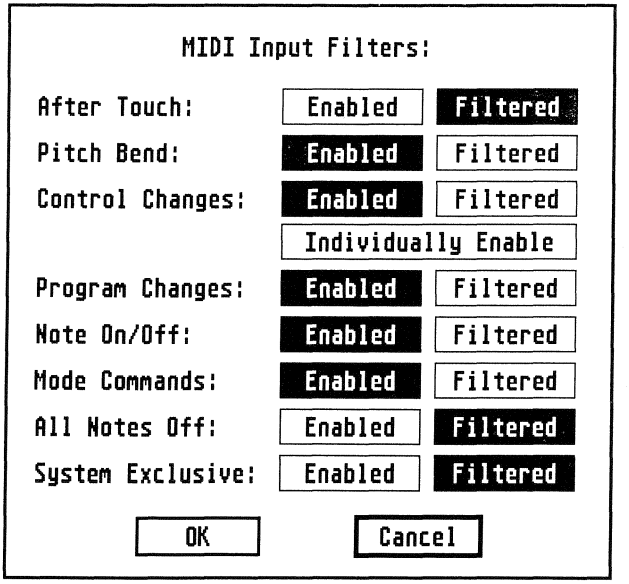
So, what you can do is: put the sequencer in MIDI Sync. This will suspend the sequencer. The problem arises when any Note On's that had started and didn't get a chance to receive their respective Note Off's are now "stuck On". Pressing Control Shift X at this point will send those Note Off's.

Just an aside to finish the story, in Perform Set mode, it is possible to restart a song by pressing play. It will only proceed through the set when a STOP or end of song occurs. So if you take the sequencer out of MIDI Sync and put it back into Internal Sync, and press Play, the song will start again.

MIDI INPUT FILTERS

This feature allows you to filter out MIDI events you may not want to record. (Also see "Record Filter" in Chapter 5.). For example, After Touch messages eat up a lot of memory. If you don't need After Touch, filtering it leaves more room for your music.

To activate the MIDI Filters:
- Select Input Filters from the MIDI menu
- A dialog box listing all the MIDI Input Filters available appears

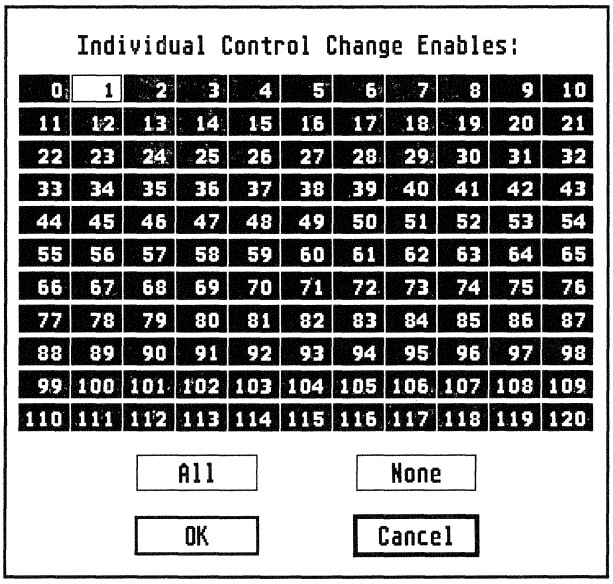


To Enable Or Filter Out A Controller:
- Click on your selection

For example, MidiTrack ST defaults to filtering out After Touch. This means you will NOT record After Touch messages unless you select the **Enabled** box. It also filters out All Notes Off messages (which is a MIDI mode message, not to be confused with Note Off). Filtering should be unnecessary but can cause problems in overdubbing situations if enabled.

For a discussion of System Exclusive recording, see Chapter 8.

Control Changes can either be all Enabled, all Filtered, or Individually Enabled. If you have Individually Enabled selected and click OK, you will see another dialog box:



If a Control Change number if highlighted (darkened), it is Enabled. If it is not highlighted, it is Filtered. Click on a number to change it between Enabled and Filtered.

If there are only a few Control Changes you want to Filter, first click All to Enable all of them, then click individually on the ones you want to Filter. In the picture above, all Control Changes except #1 (mod wheel) are Enabled.

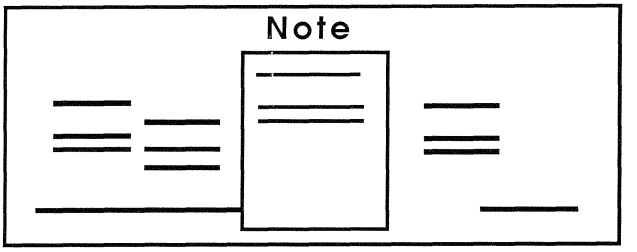
If there are only a few Control Changes you want to Enable, first click None to Filter all of them, then click individually on the ones you want to Enable.

Click OK if you are satisfied with the Individual Enables; click Cancel if you want to keep the previous settings. Clicking Cancel at this dialog box does not cancel any changes you may have made on the first ("MIDI Input Filters") dialog box; the OK/Cancel buttons of the two dialog boxes act independently.

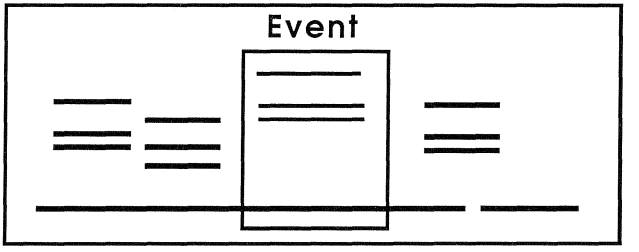
PUNCH METHOD

This determines how MidiTrack ST handles Note (and Hold Pedal) Offs: (1) at the Punch-In and Punch-Out Times, (2) at the Start and End of Sections that are Glued or are parts of Chains that are Flattened, and (3) at the Start Time when you Insert/Remove Time.

If you select the Note Punch Method, then any note you punch in the middle of, or that is sustaining through the area you're punching, will automatically be turned OFF. The hold (sustain) pedal (control change #64) will be turned OFF as well.



By selecting the Event Method, the notes (and hold pedal) will NOT be turned OFF if you punch in the middle of them. You could find this useful if, for example, you were punching out a staccato chord in the upper half of your keyboard, but had a sustained bass note occurring at the same time. By selecting the Event Method, you can punch out the short chord without worrying about your sustained bass note cutting off. But you do need to ***be very careful not to punch out a Note (or Hold Pedal) Off while leaving the corresponding Note (or Hold Pedal) On, as that will result in a "stuck" note.***

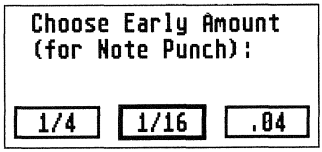


To Set The PUNCH METHOD:

- Select Punch Method from the Options menu
- A dialog box appears offering you a choice of punching by Note or Event
- Click on your selection. There is no Cancel button but you can visually see the currently set Punch Method (thicker box).

EARLY AMOUNT

This sets a specific amount of time ***before*** the actual Punch In Time that MidiTrack ST will start to record. When you select Early Amount from the Options menu, the following dialog box appears:



At this point, you have to pick one of the settings. There is no Cancel button but you can visually see the currently set Early Amount (thicker box).

This function works directly in conjunction with the Note Punch Method. If you set the Early Amount to **1/4**, and you play anything up to a quarter note (0.96) before the Punch-In Time, it will record that at the exact Punch-In Time. This is to not lose events due to "sloppy" playing.

However, with continuous controllers (such as MIDI volume or breath control), it can cause a lot of events to accumulate (uselessly) on that one Punch-In tick. Thus, you can adjust the Early Amount to compensate for this.

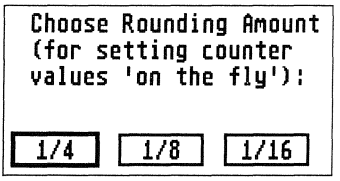
There are 3 values:

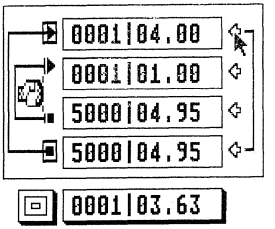
1/4 note = 96 ticks
1/16 note = 24 ticks (default)

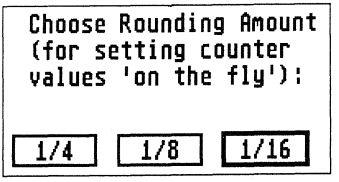
The third value is **.04** or 4 ticks which is a value just early enough to compensate for "slight" human playing but not enough to likely condense any continuous controller values.

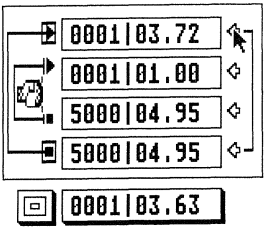
ROUNDING AMOUNT

This function allows you to select whether Time Settings (Start Time, End Time, Punch-In Time, Punch-Out Time) will be rounded to the quarter, eighth, or sixteenth note when they are set "On-The-Fly" when you click with the Right button.







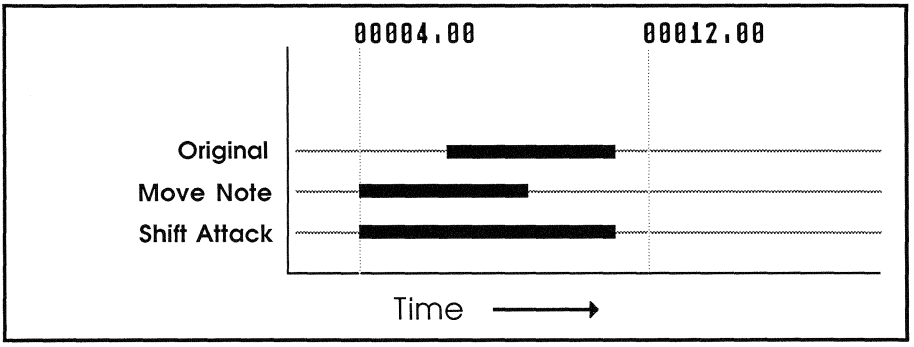


QUANTIZE METHOD

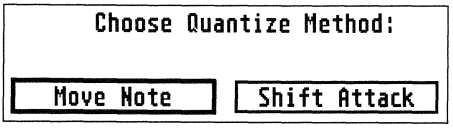
This determines how MidiTrack ST handles events when using the Quantize function.

If you choose the Move Note Method, then when you Quantize a track, each note will move to the correct timing point, without any change to the duration of the note. Other types of events are NOT moved.

The Shift Attack Method causes just the front of the note (the Note On) to slide to the correct timing, which changes the duration of the note. Any other events between the old Note On time and the new Note On time are pushed to the new Note On time.



To Set The QUANTIZE METHOD:
- Select Quantize Method from the Options menu
- A dialog box appears offering you a choice of two quantizing methods:



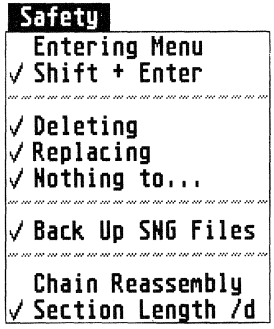
- Click on your selection. There is no Cancel button but you can visually see the currently set Quantize Method (thicker box).

Quantizing Legato Performances

When working with parts played legato, the choice of Quantize Method can be important. Shift Attack preserves the order of Note On and Note Off events: this will keep legato parts legato and non-legato parts non-legato. Move Note can lead to less-predictable behavior as the Note Off from one note may sometimes get reversed in order with the Note Off from the next note. Legato playing (only supported on some instruments, often only in a monophonic mode) is usually accomplished by playing the next note before letting up on the previous note. Reversing the order of Note On and Note Off events can change legato parts to non-legato or vice versa.

THE SAFETY MENU

These are all contained in the Safety menu and are toggled ON or OFF by pointing to the option and clicking. If the option is ON, a small check mark appears next to the item; if it is OFF, there is no check.



Entering Menu

It most Atari ST programs, the menus drop down when the mouse is moved into the menu bar area. In MidiTrack ST, whenever a menu drops down, the song stops. This is done to prevent timing delays (because the Atari ST is not a multi-processing computer).

If Entering Menu is ON, then whenever you move into the menu bar area, you must click the LEFT button to cause the menu to drop down (the song will continue playing until you click).

If the mouse moves across the surface it is on (maybe caused by vibrations from the loud music you are creating!), it could end up in the menu bar area causing the song to stop while you're in the middle of recording a "perfect" take. Entering Menu ON prevents this from occurring.

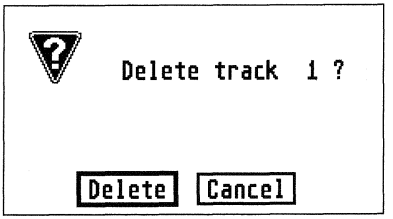
Shift + Enter

The default key command equivalent for KEEP is Shift Enter, to make it hard to accidentally replace a track with unwanted information. (Shift + Enter is ON).

Turning Shift + Enter OFF changes this key command to one key: Enter. This makes saving a track easier.

Delete Warning

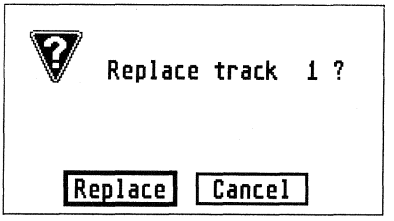
If you select Delete Track from the Track menu, a prompt will ask you if you're sure you know what you're doing (as long as the **Deleting** option is left ON).



If the **Deleting** option is turned OFF (not checked), then when you select Delete Track, that's just what it does... no questions asked. Make sure you don't want this track, because even the best of us make mistakes now and then.

Replace Warning

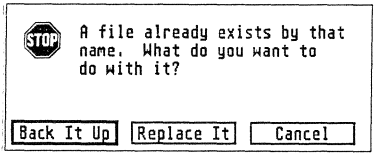
The Replace Warning appears when you perform any action which ends up replacing the track you select as a destination (as long as the **Replacing** option is left ON).

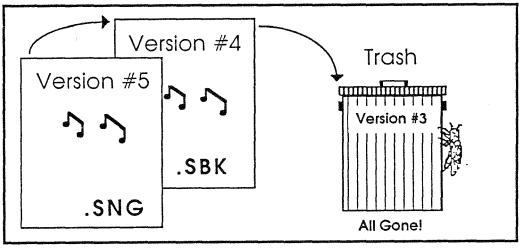


If you turn the **Replacing** option OFF (not checked), it assumes you intend to replace the selected track with the new information, and it won't ask you before replacing it.

Back Up SNG Files

With this checked, each time you Save or Update a song, the program automatically makes a backup song file of the previous version. The previous version is renamed with the extension **.SBK** (song backup). (If there was already an **.SBK** file with that name, then it is deleted from the disk, and the new **.SBK** file replaces it.)





To Load The Backup Version:

- Insert the disk containing the backup version of the Song File
- Select Load SNG/MID File from the File menu with the Left button
- Click on the Directory Line to move the cursor from the Selection Line
- Type the Backspace key 3 times (erasing **SNG**)
- Type **SBK** (the directory Line should now be: **A:*.SBK**)
- Click anywhere on the scroll bar (this updates the listing)
- Click on the **.SBK** file you want to load
- Click OK

If Back Up Files is not checked, then every time you try to Save or Update a song when a song file by that name already exists, a dialog box will appear asking what you want to do.

Click **Back It Up** to have the program create an **.SBK** file (as described above)

Click **Replace It** to have the program replace the previous version with the current one (a back up file is not created).

Note:
Back Up SNG Files only applies to SNG files -- no other file types (MID, SET, or UPR Files). MID Files are always replaced, not backed up. No Warning is given if a file already exists by the same name.

Nothing to...

When selecting an empty track to Delete or when trying to KEEP nothing, a dialog box appears telling you that there is nothing to Delete/KEEP because the Track/KEEP Buffer is empty. Turning this Safety Off (unchecked) prevents that dialog from appearing, and it assumes that you don't need to be reminded that a Track is empty if you try to Delete it.

Chain Reassembly

If you change the Start or End Time of a Section, and then play, all affected Chain Tracks need to be updated. If this Safety is checked, a dialog will ask you to redefine these Chains. See Using Chains in Chapter 5.

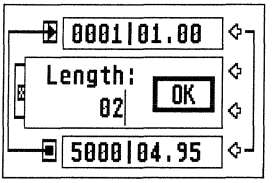
Section Length /d

When you try to play a Section of zero length (one with its End Time the same as or earlier than its Start Time), it will prompt you for the Section Length (in Bars if you're in Measures Mode, in Beats if you're in Beats Mode).

Left Clicking Section Length in the Safety menu toggles the Safety check. If it is Checked, it will prompt you for a Section Length before playing. If not checked, it will automatically set the length to the current Section Length without prompting.

Right Clicking Section Length brings up the dialog asking you to enter a Section Length.

The Safety is saved in the User Preference File.
The Section Length itself is saved in each Song File.



KEY COMMAND MACROS

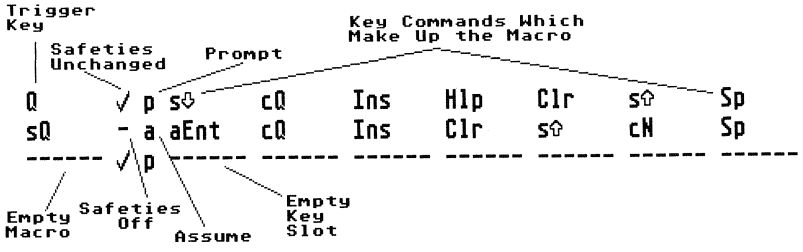
Take a quick look at Appendix K. Those pages list all of the Key Commands that are available in the program. When you press a combination of keys on your computer keyboard, you can invoke a function that could also be initiated by clicking the mouse.

There are times, however, when you find yourself doing the same groups of Key Commands over and over. For example, you often Quantize a track to a 16th Note, save the result to the next empty track, turn OFF the original, turn ON the new Quantized track, and finally PLAY to hear the result.

A Key Command Macro (KCM) allows you to create a new Key Command which is made up of a combination of existing Key Commands. It is possible to define up to 20 KCMs (all shown on one page).

Each KCM consists of the following items:

- A Trigger Key (A Key which triggers the Macro -- leftmost column)
- Up to 10 Key Commands (rightmost 10 columns)
- Delete/Replace Safeties set (checked) or not ("-")
  (only effective if checked both here and in Safety menu; otherwise ignored)
- Dialog boxes Prompt you or Assume default or previous values


Trigger Key
Safeties Unchanged
Prompt
Key Commands Which Make Up the Macro
Q √ p s⇩ cQ Ins Hlp Clr s⇧ Sp
sQ - a aEnt cQ Ins Clr s⇧ cN Sp
------ √ p ------ ------ ------ ------ ------ ------ ------
Empty Macro
Safeties Off
Assume
Empty Key Slot

To Create A Key Command Macro:

- Select Key Command Macros from the Inspect menu
- Left Click on the first Trigger slot available (upper left corner)
- Press a key you want to be the trigger
- It will appear in that selected slot
- Left Click on the first Key slot
- Press the desired Key Command
- It will appear in that selected slot
- Repeat this using the next Key Slot until your Macro is done

Some Points To Be Aware Of:

- You can only click on trigger keys which exist or the first empty macro on the screen.
- You can only click on a macro slot that already exists or on the first empty slot on any macro line.
- When you click on a trigger key or macro key slot, it will be displayed in inverse video.
- If you don't want to hit a key (which will place that key in the slot), click the right mouse button.
- To assign a Key to a slot, Left Click on it, then press the desired key combination (see Appendix K).
- To insert inside an existing Macro, Right Click on the slot where you want the new key inserted.
- To delete a slot from a Macro, Alternate Click on the slot.
- To delete an entire macro, Alternate Click on the Trigger Key for that macro.
- Click on the safety/off and prompt/assume flags to toggle them.
- You'll get a warning if you try to assign two KCMs to the same trigger key.

How Slots Are Displayed:

- Unused slots are displayed as dashes.

- Key combinations are displayed as:
  c = Control
  a = Alternate
  s = Shift
  n = Numeric Pad
  ...and the key name

- The key name displays the primary (lower, except Clr) key cap name abbreviated to 3 characters if necessary (for example, Help is Hlp, Backspace is BSp, and Enter is Ent). Single character keys on your keyboard are displayed as that character in the Macro (even on European keyboards). Keys which have their names printed on them (Return, Tab, Help, etc) are shown by their English language names.

Saving Key Command Macros:
KCMs are saved as part of a **.UPR** file (see User Preferences).

Using Key Command Macros:
Anytime you are on the main screen or when selecting Tracks to edit, you can invoke a Key Command Macro by hitting its trigger key.

Macros cannot be nested; that is, you cannot include a macro trigger key as a key within another macro. You can, if you want, redefine keys that currently do something to be macro trigger keys. By disallowing nesting, the program can instead allow the use of macros to swap keys! For example, you can set up one macro which makes the Return key act as the Space Bar normally would, and create a second macro which makes the Space Bar act as the Return key normally would, and thus make Return start and Space Bar stop the sequencer!!

If you choose a Trigger Key which is used by a predefined Key Command, the original operation of that Key will be lost unless you assign another Trigger key to that predefined function. Be careful. You may lose the ability to perform some Key Commands until you redefine your Macros.

Key Command Macros do not function inside dialog boxes. Do not include Return in a macro in an attempt to "OK" out of a dialog box; you will need to hit Return (or click OK) manually. If you want to avoid seeing the dialog box completely, use the "a" (assume) option instead of "p" (prompt).

The commands affected by "a" (assume) are:

eXtract Channel
Unmix Channels
ZoneSplit Track
KeySplit Track
Flatten Chain (only prompts if the Chain is Endless).
Glue In Section
Alter Timespan
Quantize Track
Humanize Track
Durate Track
Transpose Track
Velocity Adjust
Replace Every
Eliminate Every
Optimize Every
New Song
Initialize Song

While you can execute macros of real-time commands while the sequencer is playing, the exact ticks at which they will be executed can not be guaranteed (execution of commands has lower priority than recording and playback).

Let's look at the example Macros we've supplied. (To load these example Macros, select User Preferences from the Options menu, click Load KCMs [lower left], open the **EXAMPLES** folder, click on **MACROS.UPR**, and click OK) The Key Command for Inspect Key Command Macros is **Shift K**. However, in this example Macro file you just loaded, we've assigned a new key command to that -- so just press **K**.

The first example is triggered by typing **Q**. This is a description of what happens when you press **Q**:

Shift Down Arrow	Turns OFF the current track.
Control Q	Quantizes the current track.
p	Prompt. It waits while the prompt asks you for a quantize value.
Insert	Selects the current track as the Source.
Help	Finds the next empty track.
ClrHome	Saves the Quantize result to that new track.
Shift Up Arrow	Makes sure that track is ON.
Space Bar	Plays the sequence to hear the changes.

The second example is a variation of the first. If you trigger the Macro (**Shift Q**), it will KEEP, Quantize, give you a chance to name the track, then play the quantized result.

Alternate Enter	Saves what's in the KEEP buffer to the next empty track
Control Q	Quantizes the current track
a	Assume. Notice that this one assumes no prompts and skips the dialog asking what Quantize value you want to use. It assumes the last selected value.
Insert	Selects the current track as the source
ClrHome	Selects the same track as the destination
—	Safeties Off. Notice that even if Replace is checked in the Safety menu, because Safeties is set to OFF here, the Safety menu is ignored and you are therefore not asked if you want to replace the current track.
Shift Up Arrow	Makes sure the current track is ON.
Control N	Gives you a chance to name the new track.
Space Bar	Plays the sequence to hear the changes.

The two KCMs that follow show you how it is possible to use the power of Macros when being prompted for a Track to Edit/Inspect. These Macros will select both the Source and Destination Tracks. The first one is non-destructive, and the second is destructive (erases the Source):

Numeric 1 = Ins Hlp Clr
Numeric 2 = Ins Clr

The next five are time savers. There is a function called Instant Inspect (both click on a track number to enter your favorite editing screen). These Macros are key equivalents to that function -- and you don't have to have a favorite!

sG Ins (Graphic Edit -- works on both MIDI and Shadow Tracks)
sE Ins (Event Edit -- works on both MIDI and Shadow Tracks)
sC Ins (Chain Edit)
sT Ins (Tempo Track edit)
sM Ins (Meter Track edit)

The remaining example Macros show you how it is possible to re-arrange the existing Key Commands by re-assigning them to new ones of your own:

Numeric 0 Toggles Cycle Mode (was Shift Numeric /)
Enter Finds empty track before KEEPing (was Alternate Enter)
Space Bar STOP (was Return)
Return PLAY (was Space Bar)
K This is how you got in here so easily! (was Shift K)

Note:
Please be fully aware of all Key Command definitions when creating Macros of your own. The Macro may not appear to do what you want it to if you do not define it correctly or if you press the Macro Trigger key at the improper time.

CONTROL CHANGE NAMES

This is a screen on which you can type in a Control Change Name for each Control Change (0 -31, 64-120).

To Change A Control Change Name:
- Select Control Change Names from the MIDI menu
- Click once between the quote marks to name
- Click on the + to change polarity

Polarity Definitions:

- (Bipolar) parameters which have two sides to a positive value (ex, #8 Balance and #10 Pan)
+ (Unipolar) Positive Values only (ex, #1 Mod and #7 Volume)
0 (Numeric) Used for parameters which have no meaning graphically, so they are always shown as numbers whether you are in graphic or numeric display (ex, Registered and Non-Registered Number LSBs & MSBs)

Note:
You may want to include leading blanks for short names to center them in the Control Column.

```
 0: "      " +
 1: "  Mod " +
 2: "Breath" +
 3: "      " +
 4: " Foot " +
 5: "PorTim" +
 6: "DatEnt" +
 7: "Volume" +
 8: "Balanc" -
 9: "      " +
10: "  Pan " -
11: "Expres" +
12: "      " +
```

USER PREFERENCES FILE

These user adjustable settings are saved in a file called User Preferences.

The User Preference File contains the following items which are saved in a UPR file and can be loaded at any time (good for bringing your own personal preference set up from your studio to another studio for example):

- Main Screen Colors
- Graphic Screen Colors
- Load Safety from SNG File
- Load Patch Numbering from SNG File
- Inherit Track Name when copying Track
- Inherit Channel / MidiPlexer Port when copying Track
- Inherit Section Name when using Copy To Next
- Set Mouse Delay & Repeat Rate
- Set Preferred Instant Inspect Screen
- Set FF/Rew Speed
- SNG/MID/SET paths
- Key Command Macros (all 20)
- Metronome Notes
- Channel Settings
- Control Change Names
- All Safety menu settings

To Access the User Preferences Screen:
• Select User Preferences from the Options menu
OR
• Press Control Alternate Shift U

Colors

You can set the colors independently for the Main Screen and Graphic Screen, and independently for color and monochrome. The colors are made from three numbers -- the RGB (Red/Green/Blue) color scheme. The limit range is from 0 to 7 for each digit. The following example settings show all colors OFF (BLACK), all colors ON (WHITE), and an example color combination (a REDdish color is shown):

BLACK	WHITE	RED
R=0	R=7	R=6
G=0	G=7	G=1
B=0	B=7	B=2

The default arrangement of the screen colors are shown below:

Main Screen

777 (white)	Border/Background
145 (blue)	Blotter
630 (red)	Accent
000 (black)	Text

Graphic Screen

000 (black)	Border/Background
777 (white)	Selected Notes
642 (yellow)	Notes/Curve
145 (blue)	Text

In monochrome, the Main Screen is black on white, and the Graphic Screen is white on black (inverted).

Reminder
The reason the Graphic Screen is inverted in both color and monochrome is because it's easier to see a tiny white dot (short Note) on a dark background than to see a tiny black dot on a white background. But since the User Preferences file saves the settings you prefer, you can set things however you want!

Be careful not to Exit (Press Return) or Save with the border/background and text colors the same, or else you won't be able to read anything!

Safety Check/Patch Numbering

The Safety menu settings and Patch Numbering are saved in the User Preferences file and in the **.SNG** file (for compatibility with EZ-Track Plus and with earlier versions of MidiTrack ST). When you load a **.SNG** file, you probably don't want to tamper with your preferred Safety and Patch Numbering settings, so it doesn't load those settings from the **.SNG** file.

But there may be occasions where you want to see how those settings were set in a **.SNG** file: by highlighting the two buttons in the top right of the User Preferences dialog, you can make it load the following from **.SNG** files:

- 5 Safety menu settings
  - Entering Menu
  - Shift + Enter
  - Deleting
  - Replacing
  - Back Up SNG Files
- Patch Numbering settings (Channel Settings -- MIDI menu)

Note:
If you have set up your Patch Numbering in a previous version of the program, do the following:
- **Select Patch Num button next to Load from SNG File?**
- **Load an AUTOLOAD.SNG or other .SNG file with patch numbering**
- **Go back to User Preferences and turn off Patch Num button**
- **Re-Save your AUTOLOAD.UPR file**

Copy Inheritance

Several Copy Inheritance options are available (and default to active). You can have the Track Name get copied when you copy or shadow a track; you can have the Track Channel/Port get copied; and you can have the Section Name get copied when you Copy to Next. Copy Inheritance is suppressed if the name or channel of the track being copied to is not blank.

Instant Inspect

There is an Instant Inspect function, available by Both Clicking on the track number. If the track is type "c", "t", or "m", it knows what type of track this is and enters the appropriate screen. But if the track is type ":" (MIDI) or "s", it has to know whether you prefer the Graphic Screen or Event List for Instant Inspecting: this is the purpose of the Preferred Editor setting

You can independently set the following parameters:

Mouse Delay Short / Medium / Long
The amount of time it takes for it to start repeating when you hold down either mouse button.

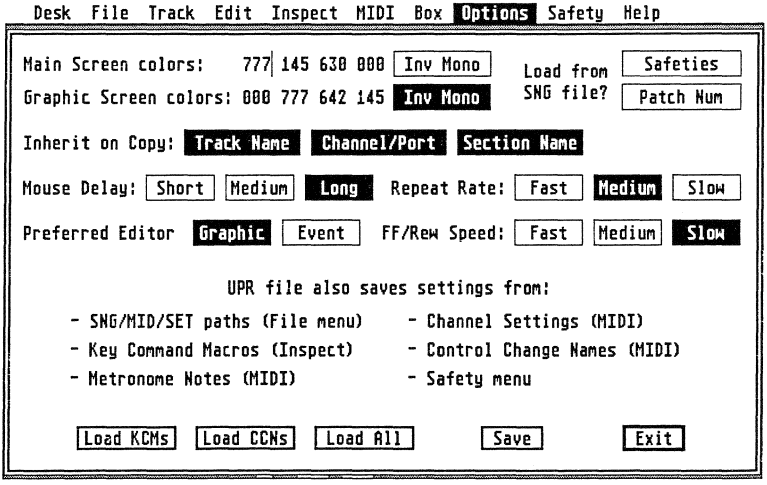
Repeat Rate Fast / Medium / Slow
How fast it repeats when you hold the button down.

FF/Rewind Speed Fast / Medium / Slow
How fast it goes when you hold the button down. In all cases, it takes a second to reach the chosen speed.

There are other parameters that are saved in a User Preferences (**.UPR**) file which are set elsewhere in the program. Safeties are set in the Safety menu, and Key Command Macros are set in the Inspect menu.

You can either Load All of an existing **.UPR** file, or load just the Key Command Macros or just the Control Change Names, by clicking on the appropriate button at the bottom of the User Preferences dialog box.

Click on "Save" to Save the User Preferences (from the dialog and other settings, as explained) in a **.UPR** file. The **.UPR** extension will be added automatically.


Desk File Track Edit Inspect MIDI Box Options Safety Help
Main Screen colors: 777 145 630 000 Inv Mono
Graphic Screen colors: 000 777 642 145 Inv Mono
Load from SNG file?
Safeties
Patch Num
Inherit on Copy: Track Name Channel/Port Section Name
Mouse Delay: Short Medium Long
Repeat Rate: Fast Medium Slow
Preferred Editor Graphic Event
FF/Rew Speed: Fast Medium Slow
UPR file also saves settings from:
- SNG/MID/SET paths (File menu)
- Key Command Macros (Inspect)
- Metronome Notes (MIDI)
- Channel Settings (MIDI)
- Control Change Names (MIDI)
- Safety menu
Load KCMs
Load CCNs
Load All
Save
Exit

Paths

Individual drives and paths for **.SNG**, **.MID**, and **.SET** files are memorized by the program, and can be saved in the User Preferences. Before you Save a **.UPR** file, do a Load SNG, a Load MID, and a Perform Set without selecting a file but selecting a drive and folder and clicking either OK or Cancel in the file selector.

If you're going to use the same **.UPR** file on different drives or with different floppy disks that have folders set up differently you may not want the paths saved in the **.UPR** file.

To Drop Path Saving In UPR File:

- Select Load SNG from the File menu
- Click on the path (bottom of Little Green Selector)
- Press and hold the Left Arrow key until the cursor is to the left of the drive letter
- Press the Delete key twice to delete the drive letter and colon (:)
- The path should now read ***.SNG**
- Click OK to register the new path
- Click OK again to exit the file selector

- Now save the **.UPR** file (described below)

When you later load the **.UPR** file, it will notice a blank **.SNG** path, and know that it should reset all the paths to the drive/folder you ran the program from. This, by the way, is how the Factory **AUTOLOAD.UPR** is set up, so when you run the program it defaults to meaningful paths.

Saving and Loading UPR Files

To Save UPR Files:
- Set up all applicable values for a User Preference File
- Click on Save at the bottom of the User Preferences Screen
- Type in an 8 character name
- The **.UPR** extension is added automatically (assuming you don't type into any of the 3 extension characters)
- A BACKUP FILE IS NOT CREATED IF YOU OVERWRITE AN EXISTING **.UPR** FILE!!
- Click OK

To Load UPR File (All Settings):
- Select User Preferences from the Options menu
- Click on Load All at the bottom of the User Preferences Screen
- Select a **.UPR** File
- Click OK

You can also Load All from the Main Screen by pressing Control Alternate Shift L.

Note:
There is a FACTORY.UPR File on the Master Disk just in case the AUTOLOAD.UPR file is changed or damaged. It contains all of the preset factory User Preference Settings.

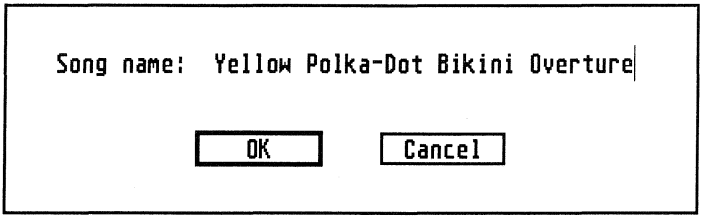
To Load Key Command Macros (KCMs):
- Select User Preferences from the Options menu
- Click on Load KCMs at the bottom of the User Preferences Screen
- Select a **.UPR** File containing the Key Command Macros you want
- Click OK

To Load Control Change Names (CCNs):
- Select User Preferences from the Options menu
- Click on Load CCNs at the bottom of the User Preferences Screen
- Select a **.UPR** File containing the Control Change Names you want
- Click OK

NAMING A SONG

You can give your song a title (up to 32 characters). This title will remain in the Song Name display. THE ***SONG NAME*** IS NOT NECESSARILY THE SAME NAME AS THE ***SONG FILE NAME*** ON THE DISK (See below).

To NAME A SONG:
- Shift Click (or Both Click) on the Song Name area
- Type in the title of your song (use Backspace and Esc when necessary)
- Click OK



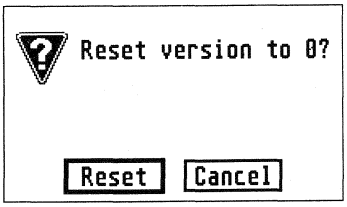
It appears in the Song Name display.

Types Of Names:	There are 3 independent types of names per song:
1-**Track Name**	16-character name. One name per track.
2-**Song Name**	Name of song. 32-character name shown at top of Control Display.
3-**File Name**	The 8-character name you give your song when you save it to disk.

RESET VERSION NUMBER

You can reset the version number back to 0. Notice that once you Save again, it becomes 1 (there can never be song Saved as Version 0). The limit is Version #999.

To Reset The Version #:
- Shift Click (or Both Click) on the Version # area
- Click OK to RESET

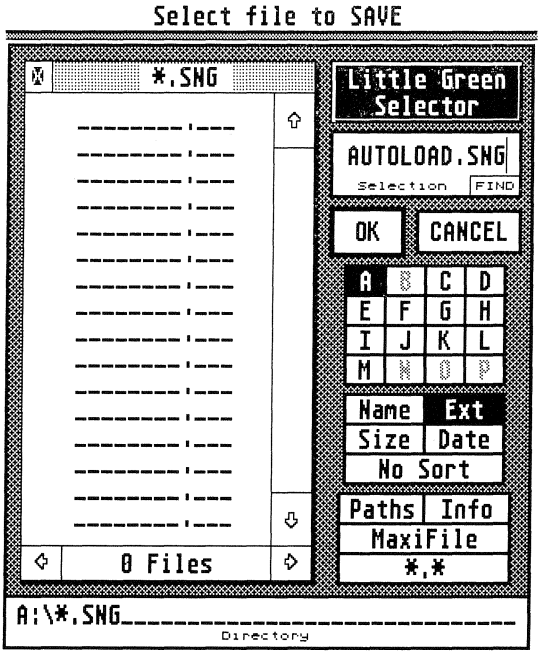


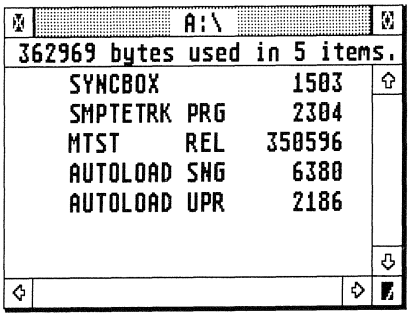
AUTOLOAD / AUTOPLAY FILES

When you run MidiTrack ST, it checks the disk for a file called **AUTOPLAY.SNG**. If this file is there, it loads and plays the song. If **AUTOPLAY.SNG** isn't there, the program looks for **AUTOLOAD.SNG**, and if it finds it, it loads the song file.

Since everything you set is saved in each song file, you can customize the program defaults by setting up a blank song the way you like and saving the song file as **AUTOLOAD.SNG**.

This is also good as a start-up song. For example, if you name the current song you are working on **AUTOPLAY.SNG**, then when you load the program, that song will automatically begin playing right after the program loads.





It will be saved on your disk and should be on the same disk that the program is on. It will appear on the PROGRAM DISK directory as shown. The next time you load the program, in this example, the **AUTOLOAD.SNG** will also load.

AUTOLOAD Files Loading Order

When MidiTrack ST is run, it checks for AUTOLOAD files in this order:

- It loads **AUTOLOAD.UPR** if it can find it.
- If it can find **AUTOLOAD.SET**, it Performs it. **AUTOLOAD.SNG** is not loaded in this case.
- If **AUTOLOAD.SET** was not found, it loads **AUTOPLAY.SNG** if it can, and if that isn't found either, it then looks for **AUTOLOAD.SNG**.

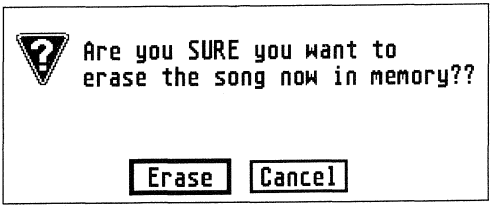
NEW SONG

When the program first loads, all of the settings that appear are the program's factory default settings (a blank song, Start Time set to 00000.00, tempo =120, metronome ON, etc). If you use an **AUTOLOAD.SNG** (see previous page), your personal default settings are loaded instead.

After you've been in session for a while, you may decide to start over. If this is the case, select New Song from the File menu. If you have an **AUTOLOAD.SNG** that has your preferred settings, then it will be reloaded from disk. If you're not using **AUTOLOAD.SNG**, then New Song will reset the current song to the factory defaults. *It does not have anything to do with any file you have on your disk; it only resets* ***memory.***

To Start A NEW SONG:

- If you used an **AUTOLOAD.SNG**, make sure it can be found. New Song looks for the **AUTOLOAD.SNG** on the same drive/path it was loaded from when you booted up the program.
- Select New Song from the File menu
- A dialog box appears verifying your request to erase the song in memory (not the song saved on the disk)



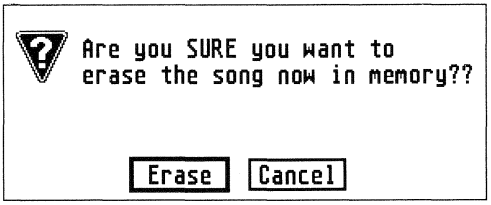
- If you're sure this is what you want, click the Erase box

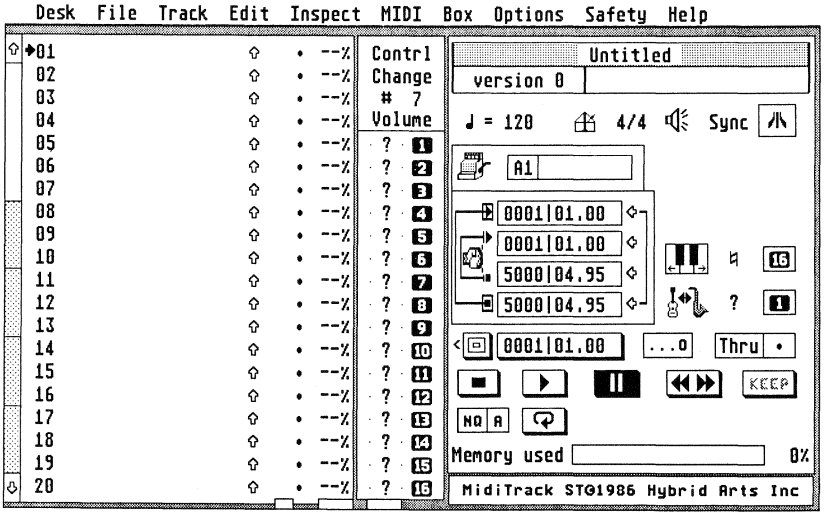
Be sure before you do this, because *if you haven't saved the song to disk, it's gone forever.*

INITIALIZE SONG

As you learned on the previous page, if you set up an **AUTOLOAD.SNG**, selecting New Song from the File menu will reload your **AUTOLOAD.SNG**. But if you want to return to the factory defaults instead of your **AUTOLOAD** settings, select Initialize Song from the Options menu.

If you don't use an **AUTOLOAD.SNG**, New Song and Initialize Song perform the exact same function.





CHAPTER 7
GRAPHIC EDITING

In This Chapter:

- Graphic Editing Overview
- Graphic Screen Tour
- Graphic Screen Modes
- Moving & Zooming
- Playback
- Erasing An Area Of Notes
- Adding Notes
- Selecting, Moving, & Editing Notes
- Using The Curve Display
- Flip

Key Words:

- Long-Click
- Pixel
- Polyphonic Key Pressure
- Short-Click
- Zoom

GRAPHIC EDITING OVERVIEW

MidiTrack ST incorporates two sophisticated editing techniques that allow you to examine and/or fine-tune your tracks to any degree: Graphic Editing and Text Editing. The two methods complement each other and provide you with a variety of ways to Inspect and modify your music recording in detail.

This chapter explains the Graphic Editor, which lets you display and edit MIDI information graphically. (Text editing is covered in the next chapter.)

Terminology

You'll see the terms Long-Click and Short-Click used in reference to actions on the Graphic Screen:

Long-Click	Hold down the mouse button (for about a quarter of a second), until an operation is activated.
Short-Click	Press the needed mouse button and release it quickly (in less than a quarter of a second).

To Access The Graphic Screen:
- Select Graphic Screen from the Inspect menu
- A prompt box appears asking you to select the track to be graphically edited
- Select the track you want to inspect
- Click the Left mouse button

You will enter the Graphic Screen.

If You Don't See Any Information Immediately:

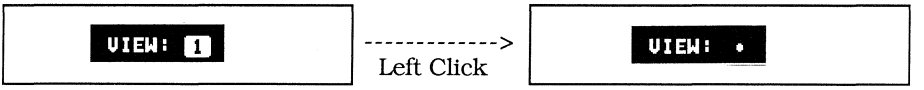
When you enter the Graphic Screen, it defaults to the start of the track unless you have Locate on, in which case it defaults to the Locate Start Time.

The default is a zoom level of 4 beats visible on the screen. If you are looking at beats 0 to 4, it's possible that these beats were used as countoff beats, so no information exists on these 4 beats. Either Long-Click with the Right button within the Notes Display area, or point to the Right Scroll Arrow and click to move the screen; you'll begin to see some information.

If the track to be graphically edited has any MIDI information on it, then you will be viewing one of the channels that exists on that track. If there are no channels on that track, then you will be viewing Channel 1 by default.

For example, if the track has Notes on channels 5 and 7, it'll come up showing channel 5 unless it was already on channel 7 (or All-Channel View mode) the last time you were on the Graphic Screen.

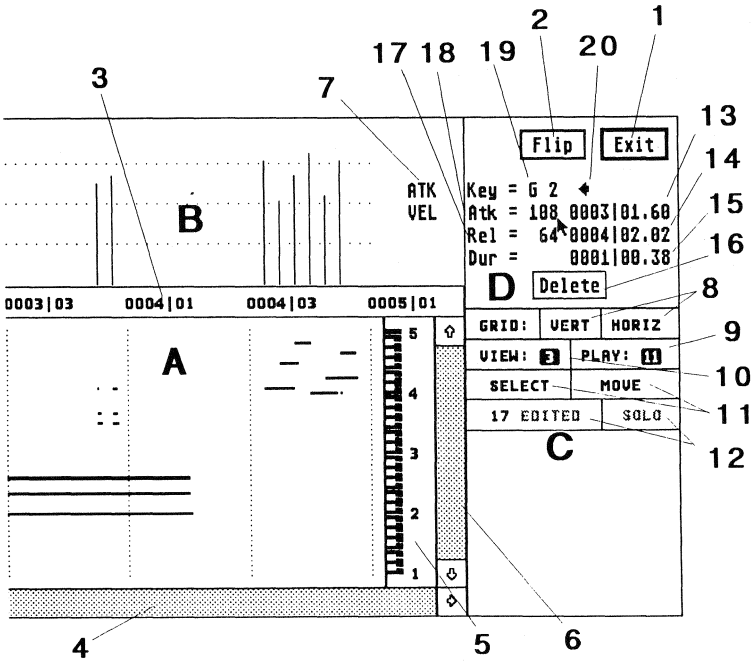
By clicking the MIDI channel number in the **View** box on the right of the screen with the Left button until you see a dot instead of the channel number, you will see data from all MIDI channels simultaneously.



GRAPHIC SCREEN TOUR

The following is a chart of the graphic screen. The screen is shown here in black-on-white for labeling clarity; in the program, the screen has a black background so you can easily spot short notes (which may display as a single pixel).

The information you see here is a graphic representation of most of the MIDI events that occur within the track you selected, including notes, velocity, MIDI controllers, etc. (Things like patch or mode changes would make little sense graphically and are the exceptions.)



1 Exit Button

2 Flip Button

3 Time Scale

4 Horizontal Scroll Bar

A The Notes Display

5 Octave Indicator

6 Vertical Scroll Bar

B The Curve Display

7 Curve Type Selector

C The Control Area

8 Grid Selectors

9 Play Channel Selector

10 View Channel Selector

11 Click Mode Indicator

12 Playback Modes

D Information Display

13 Note On Time

14 Note Off Time

15 Note Duration

16 Note Delete Button

17 Note Release Velocity

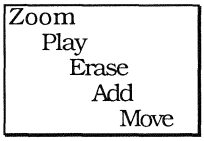
18 Note Attack Velocity

19 Note Name

20 Note Edited Arrow

GRAPHIC EDITING MODES

There are Five Long-Click Modes available in the Graphic Screen:



One of these Modes will always be in effect, as shown in the Click Mode Indicator box. It is important to know which mode you're in, as the same mouse commands will do different things in different modes. In general, the left box (usually **Select**) tells you what a Short-Click of the Left Button will do in the Notes Display, while the right box tells you what a Long-Click will do.

You can cycle through the first four modes (Zoom, Play, Erase, and Add) by Short-Clicking the Right button within the boundaries of the Notes Display. (When the mouse is in the Notes Display, it changes to a pointing finger.)

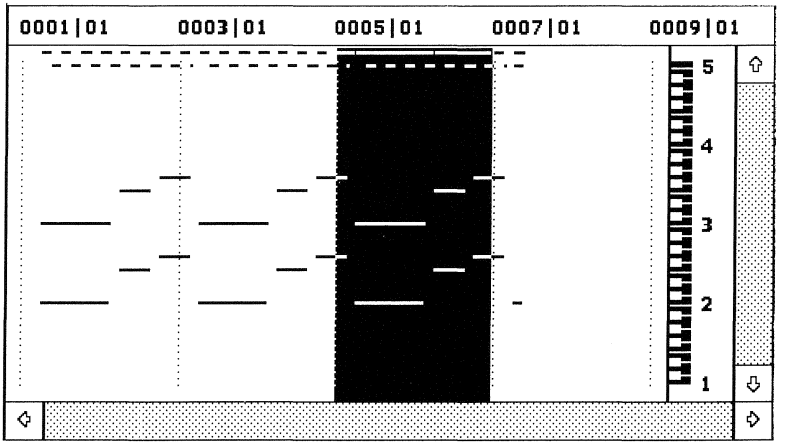
In Zoom, Play, and Erase modes, you have to Select an area to be affected (an area to zoom to, to play, or to erase).

Add mode lets you paint in new notes with the mouse (see Adding Notes below).

Move mode is enabled when a note is selected (see Moving Notes below).

To Select An Area:

- Click and Hold the Left button in the Notes Display
- A vertical line appears from top to bottom of the Notes Display
- Drag the mouse to the right
- The Selected Area becomes shaded
- Release the Left button
- Affirm the action by Short-Clicking the Left button
- Cancel the action by Short-Clicking the Right button



MOVING & ZOOMING

The Graphic Screen includes two Display areas, one for viewing and editing Notes, and the other for Velocity and the remaining MIDI events. These displays are locked together; whenever you Scroll Horizontally (in time) or Zoom, both displays are affected equally.

Horizontal Scroll Bar

Below the Notes Display area is the Horizontal Scroll Bar, which controls your horizontal position within the track you're editing. Your position in time is shown in the current Time Mode on the Time Scale (Beats or Measures Mode). The *number* of beats shown at once is controlled by Zooming; *which* beat range is shown is controlled by scrolling.

To SCROLL Horizontally:

- Point to the Right Scroll Arrow to scroll forward in time
- Point to the Left Scroll Arrow to scroll backward in time
- Click the Right button to scroll by half a screen
- Click the Left button to scroll by a sixteenth of a screen or one beat, whichever is larger

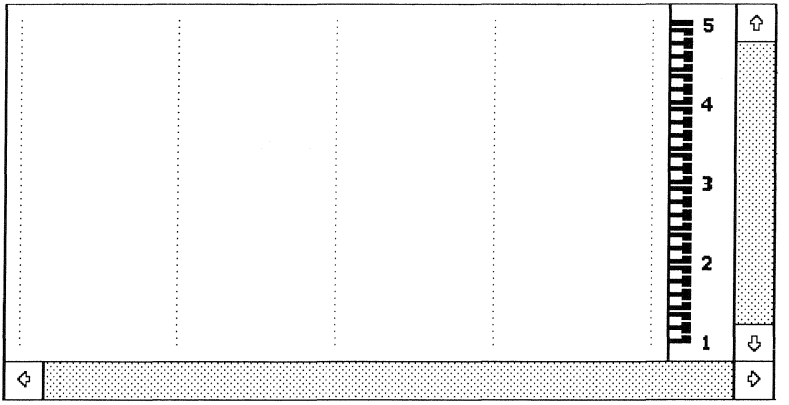
Note:
Whenever you enter the Graphic Screen, the left-most time shown is set to the current Start Time on the main screen. By setting the Start Time to the point you want to edit before you enter the Graphic Screen, you can be looking at the part of the track to be edited as soon as the Graphic Screen is drawn.

Vertical Scroll Bar

The note display can only show four octaves at the same time (always C to C), but can be scrolled to show any four-octave range within MIDI's 128 notes (C-2 to G8). C3 represents middle C on a piano (MIDI note number 60). (Due to different standards in different countries, as well as keyboard transpose settings, this may not match what your keyboard calls "C3".)

To SCROLL Vertically:

- Point to the Up Scroll Arrow to show higher octaves
- Point to the Down Scroll Arrow to show lower octaves
- Click the Right button to scroll by three octaves
- Click the Left button to scroll by one octave



View Channel Selector

In order to view data, you must have the MIDI channel of the Graphic Screen set to the same channel as the Note information. Just as a synth can be adjusted to receive only notes played over a certain MIDI channel, the Graphic Screen can be adjusted to display only those notes that have been assigned to a MIDI channel. In this way you can view and edit different parts which have been assigned different MIDI channels in a combined track.

To set the MIDI Channel to VIEW:
- Point to the View Channel Selector
- Click the Right button to increase the channel
- Click the Left button to decrease it

In order to edit, it is necessary to have a View Channel selected. Between channel 16 and channel 1, the View Channel display will display a dot. This indicates ALL channels are shown; however, you can not edit while in this all-channel mode.

Grid Selectors

You have a choice of several sets of Grid Lines.

Vertical Grids
In the Notes Display, you have a choice of Vertical Grids. When you ZOOM In as close as possible, the time values along the top represent every beat value. If your Meter is 4/4, the times along the top represent quarter note values. Based on this viewing, the following Grid Lines fall on the following values:

- 1/4 note = 5 grids (one below each time in the Time Scale)
- 1/8 note = 9 grids (an extra grid line between each labeled time)
- 1/8 triplet = 13 grids
- 1/16 note = 17 grids
- 1/16 triplet = 25 grids

- No Vertical Grids

These can help in locating the beginnings and endings of notes.

To Set The Vertical Grids:
- Point at the **VERT** button

- Click Right to toggle between ON and OFF
- Click Left to cycle between 5, 9, 13, 17, and 25 grids

Horizontal Grids
Also in the Notes Display, you can add a set of Horizontal Grid Lines (one between each B and C key, and one between each E and F key).

There is also an optional Horizontal Grid in the Curve Display, which identifies the one-quarter, half, and three-quarter points on the vertical value scale (typically 32, 64, and 96 on a scale of 0 to 127).

To Set The Horizontal Grids:
- Point at the **HORIZ** button

- Click Right to toggle the grid in the Notes Display ON and OFF
- Click Left to toggle the grid in the Curve Display ON and OFF

Zooming

There are times when you want to see the entire track, and there are other times when you want to zero in on a specific group of notes. The Graphic Screen allows you to Zoom to different views either by STEP or by ZONE.

Graphic resolution is determined by how much you magnify the overall view of the track. The minimum resolution (when fully Zoomed In) is 4 beats per screen, which means each pixel represents 1 tick.

The first time you enter the Graphic Screen, your resolution is at this 4-beat level. (To be precise, whenever we say beat, we mean quarter-note beat. If you are in Meter Mode and have the display time signature set to 4/8, then you will see 2 measures at the minimum resolution.)

Note:
The resolution adheres to a couple of rules you should be aware of: it always starts on an exact beat and the resolution is always by a power of two. In other words, the resolution will be either 4, 8, 16, 32, 64, 128, 256, etc. beats per screen.

STEP ZOOMING
This feature allows you ZOOM IN or OUT by a factor of 2, around a specified zoom-center point.

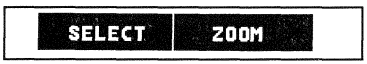
There are five time values on the Time Scale above the Notes Display.

To STEP ZOOM:
- Point at one of the 5 time values
- Click the Left button to zoom IN by a factor of 2
- Click the Right button to zoom OUT by a factor of 2
- The time value you click will stay constant as you zoom IN or OUT

ZONE ZOOMING
Zone zooming involves outlining the area you want to view. (When you first enter the Graphic Screen, you're in as close as you can go, so you'll need to back out of this close-up view to see how Zone Zooming works.)

The Mode Indicator to the right of the screen defaults to Zoom. In order to Zoom by Zone, you must be in ZOOM MODE.

To Enter ZOOM Mode:
- Short-Click with the Right button *in the Notes Display* until the Mode Indicator displays ZOOM

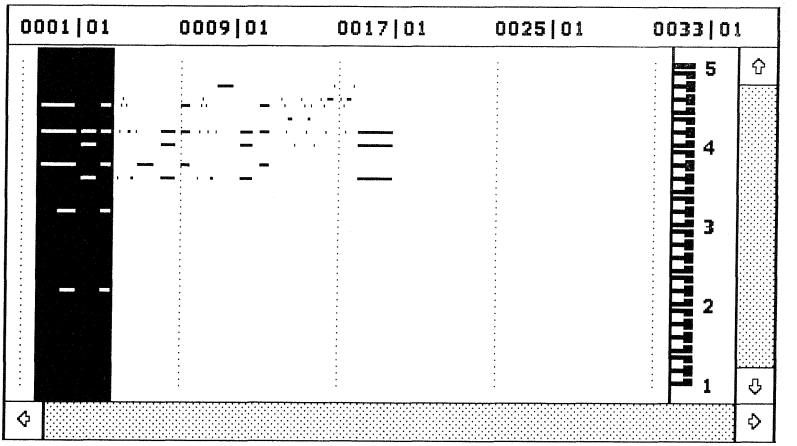


To ZOOM OUT To View An Entire Track:
- Point at the Notes Display
- Long-Click with the Right button

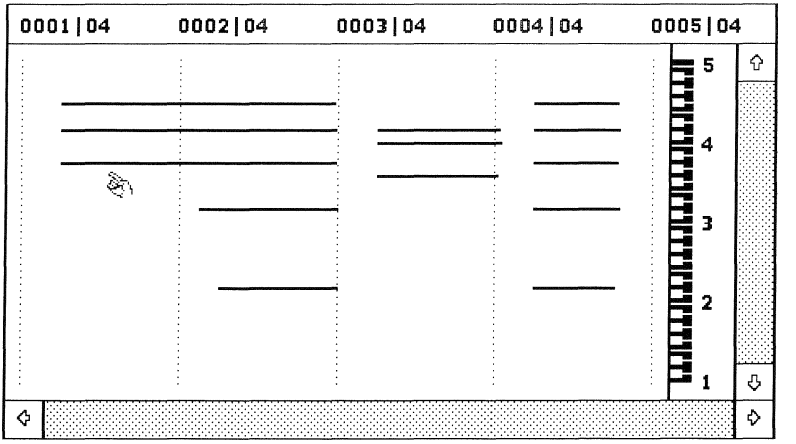
The Graphic Screen will redraw to show the whole track. The Time Scale will change, and you'll see ALL the notes on the track being edited. You'll also see the Attack Velocity information on the Curve Display (Attack Velocity is the default display when you first enter the Graphic Screen).

To ZOOM IN:

- Select an area to ZOOM in on



- AFFIRM your selection by Short-Clicking the Left button
- The Notes Display will redraw itself at the new resolution



The resolution of the display will become important once you begin editing, as you can only affect those notes you can entirely see on the screen. If a note begins on the screen but extends beyond the display, you'll have to either zoom out a little or scroll the window to the right so the entire note (from Note On to Note Off) is visible on the screen.

Zoom resolution determines the precision with which you can position notes when moving them.

A fast way to move from one end of the track to the other is to Zoom out by zone, select a section at the end of the track, and zoom back in. You can get around the track very quickly using this technique.

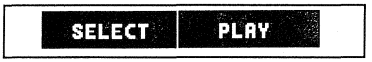
PLAYBACK

Before or after you do some editing to a track, you may want to PLAY the track just as you would from the main screen. In Play Mode, you have the option to audition the track before you save it to a destination track.

There are two ways you can play from the Graphic Screen: (1) select a range in PLAY Mode or (2) press the Space Bar to play the current screen.

Play Selected Range

To Enter PLAY Mode:
- Short-Click with the Right button *in the Notes Display* until the Click Mode Indicator displays PLAY



To PLAY Any Portion Of The Track:
- Select the Area To PLAY
- Short-Click with the Left button to AFFIRM your selection

You'll see the Play Cursor, which is a thin vertical line, move across the shaded section of the screen as it plays the notes. The music plays at the tempo you left it at on the main screen.

To Stop As It Is Playing:
- Short-Click with the Right button

Play Entire Screen

There is also another way to Play from the Graphic Screen. This method will only play what is currently showing on the Notes Display and will Stop by itself at the end of the right side. This is very convienent because you can Play within any Mode.

To PLAY The Current Notes Display:
- Press the Space Bar
- The Play Beam moves from left to right

To Stop As It Is Playing:
- Short-Click with the Right button

> **Note:**
> **You can also stop playback from the keyboard by pressing Return. Be sure to press Return before the Play Beam reaches the right side of the shaded section (if playing a range) or the right side of the Notes Display (if playing the entire screen). After it stops playing, Return becomes the Exit Key Command.**

Play Features

When you select Play mode, the playback mode features become active. There are two separate boxes in which you can control what you hear on playback.

You can toggle back and forth between the ORIGINAL, unedited track, and the EDITED version by pointing to the first box and clicking.

You can either hear a full MIX of the song (all unmuted tracks playing, plus the track you're currently editing regardless of its Mute state) or SOLO the track you've edited by toggling the second box through clicking.

Note:
On the main screen, soloing a track turns all other tracks off, even tempo tracks. Graphic Screen SOLO does not affect tempo tracks.

This gives you four options as to how you hear your music played back:

Edited version, solo	Original version, solo
Edited version, full mix	Original version, full mix

Note:
The number to the left of the EDITED/ORIGINAL box denotes which track you are working with.

The MIDI channel you hear the music played back on is shown in the Play Channel Selector to the right of the Notes Display. To select a Play Channel, click the Play Channel selector with the Right button to increase or Left button to decrease. The Graphic Play Channel functions the same as the main screen Track MIDI Channel assignment.

MidiPlexer owners also have an Output Port assignment setting.

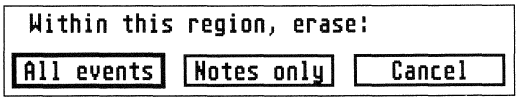
ERASING AN AREA OF NOTES

Since it's easy to spot passages of music on the Graphic Screen, it's useful to visually select a section of a track to Erase. In Erase Mode, you can delete a large group of notes all at once.

To Enter Erase Mode:
- Short-Click with the Right button *in the Notes Display* until the Click Mode Indicator displays ERASE

To ERASE Any Portion Of The Track:
- Select the Area To ERASE
- Short-Click with the Left button to AFFIRM your selection

A dialog box appears asking if you want to delete all of the events or just the note events:



Selecting **All events** will delete Pitch Bends, Channel Pressure, and all Controllers. Selecting **Notes only** will erase just Note On, Note Off, and Polyphonic Key Pressure.

The screen will automatically redraw, minus the section you've erased.

ADDING NOTES

You can ADD notes on the Graphic Screen similar to painting lines with a paint program. It is also another method of Step Entry. The note can start exactly where you click or it can be "quantized" relative to a Grid Line.

When in ADD mode, Click, Hold, and Drag right. The new note will appear as you move the mouse. The new note will become a part of that track on the Current View MIDI Channel.

To Add Notes On The Graphic Screen

- Select ADD mode (Short-Right Click)
- As you move the mouse within the Notes Display, the Information Display shows:
  - Note Name
  - Start Time
- Position the cursor where you want the note to start
  Left-Click to start drawing on the pixel where you click
  Right-Click to "Quantize" placement (nearest quarter of a grid)
- Click and Hold the desired mouse button
- Drag RIGHT
- As you "stretch" the note, the Information Display shows:
  - Note Name
  - Start Time
  - Current End Time
  - Duration
- The Duration shows any changes as you draw the Note
- Release the mouse when finished
- Click Left to AFFIRM (Right to Cancel)

Notes For Adding Notes To The Graphic Screen

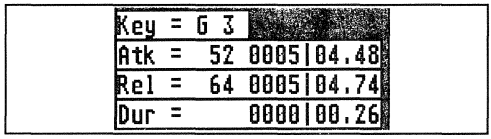
- *Keep in mind, you are Adding a Note to the current View MIDI Channel.*
- *You cannot ADD a Note if another Note is selected.*
- *You can only ADD a Note if a specific View: MIDI Channel is selected.*
- *The Note is always added with an Attack and Release Velocity of 64.*
- *You cannot "stretch" a Note past the Start Time of the next existing Note of the same key value.*

SELECTING, MOVING, & EDITING NOTES

You can adjust the pitch, placement and length of individual notes within the Graphic Screen. Move mode is always accessible from any other mode.

Whenever the mouse in in the Notes Display area, the vertical position of the mouse is displayed as a Note Name in the Information Display, and the horizontal positon in time is also displayed:

When you point at a note, the Information Display tells you not only the note Key, but also the Attack and Release Velocities, the start and end times, and the length of the note:



To be able to edit the note, you must first Select it for editing.

To Select A Note (To Enter MOVE Mode):
- Point to the note you want to edit
- Short-Click with the Left button
- Three things happen:

Color Monitor
1 The note becomes white
2 The Information Display becomes white

Monochrome Monitor
1 The note becomes thicker
2 The Information Display inverts

3 The Click Mode Indicator shows MOVE (both monitor types)

Remember, while the right part of the Click Mode Indicator tells what Mode you are in, the left part tells what a Short-Click will do. Since it reads Select, you can select another note by Short-Clicking on it.

To Exit MOVE Mode:
- Short-Right-Click anywhere in the Notes Display (not pointing at a note)
- It will return to the Mode it was in before it entered Move Mode

Move Note

To MOVE The Selected Note:
- Click and Hold *both* the Left and Right buttons
- Two vertical lines will appear, one at the front of the note, one at the end
- Move the mouse to the left or right to adjust placement of the note
  As you do so, the two lines will demonstrate where the note will be placed
- The Information Display will show changing values as you adjust the start point for the note
- When you've selected the location of the note, release both buttons
- Short-Click with the Left button to AFFIRM the Move
- Short-Click with the Right button to CANCEL the Move

You will exit Move Mode. To edit the same note again, reselect the note and repeat the steps above.

Note:
The degree to which you're able to adjust notes is dependent on the Zoom factor. The point of reference used in graphic editing is a pixel, or one unit on the video screen. If you're Zoomed all the way in (maximum resolution being 4 beats on the screen), you'll be able to adjust notes to any of 96 ticks. Depending on the resolution, you may find you're only able to adjust notes by every 16 ticks, or even full beats. To achieve greater editing resolution, simply Zoom in closer to the material you're going to work on.

Length Alteration

You can also adjust the LENGTH of the note by moving only the Start or the End of the note.

To Adjust The Length Of A Selected Note:
- Click and Hold the Left button to move the start point
- Click and Hold the Right button to move the end point
- A single vertical line appears at the front or back of the note you're moving
- Drag this line to the left or right to set the new start/end point
- The Information Display indicates what has been changed (the Duration of the note will update as you move)
- When you've adjusted the note to your satisfaction, release the button
- To AFFIRM the Move, Short-Click using the Left button
- To CANCEL the Move, Short-Click with the Right button

The note displays with its new duration.

Delete Note

You can erase single notes using the Note Delete Button found in the Information Display.

- Select the note
- Click on the Note Delete Button in the Information Display
- The note will be erased
  (there is no verification that you want to Delete it)

To Delete A Note (Graphic Screen) Using Key Commands:
- Select the note
- Press the Delete Key (next to the Return Key)

Pitch Alteration

You can also alter the pitch of the note you're editing.

- Select the note
- Point at the Note Name in the Information Display (it is labelled "Key =")
- Click on the letter to transpose by half-steps
- Click on the number to transpose by octave
- Left Click = down
- Right Click = up

Once you've begun editing the note's pitch in this way, the Information Display's color (if using a color monitor) will change and a small arrow will appear to the right of the Note Name.

- Click the arrow with the Left button to AFFIRM the edit
- Click the arrow with the Right button to CANCEL the edit

Velocity Alteration

Similarly, you can alter the Attack and/or Release Velocity. Once the note is selected, point at either Velocity value. As long as it is not 0, you can change it by clicking on each digit. (If the Release Velocity is 0, it can not be changed directly, since no real Note Off event exists. See Release Velocity at the end of this Chapter.)

Using the ST Keyboard

Because the accuracy of lining up the start/end points of notes or the adjustment of their location with the mouse can be a bit tricky, the use of the ST keyboard becomes more than helpful in the Graphic Screen -- it becomes almost mandatory for speedy editing techniques.

To MOVE notes using the ST keyboard, the same commands are given, but you use the Alternate Insert and Alternate Clr/Home keys to simulate the Left/Right buttons of the mouse and the Alternate Shift Arrow keys to simulate moving the mouse.

To Select A Note To Move Using The ST Keyboard:
- Use the Alternate Arrow keys to point to the note
- Press Alternate Insert

To Move The Start Point Of The Note:
- Press and Hold Alternate Insert
- While holding those keys, use the Arrow keys to adjust the start point

(Remember, you'll get a coarser adjustment if you use only the Alternate Arrow keys. For a fine (one pixel) adjustment, use the Alternate Shift Arrow keys.)

- Once you've decided on a start point, lift your fingers off the keys
- Press Alternate Insert to AFFIRM the Move
- Press Alternate Clr/Home to CANCEL the Move

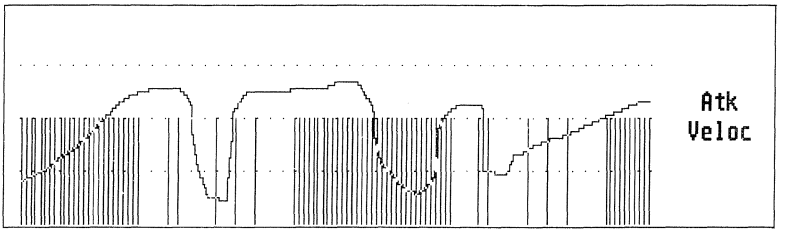
This works the same way for adjusting the end of the note; instead of holding Alternate Insert, use Alternate Clr/Home and adjust the end point with the Arrow keys.

To Move The Entire Note In Time:
- Press and hold the Alternate Insert and Clr/Home keys *at the same time*

When you see the two vertical lines appear on the screen, you must release either the Insert or the Clr/Home key (it makes no difference which one) to use the Arrow keys. Don't release *both* Insert and Clr/Home, just one of the keys, while maintaining the other key and the Alternate key depressed. You can then use the Arrow keys to adjust the location of the note.

USING THE CURVE DISPLAY

Other MIDI information besides Notes is graphically edited in the Curve Display.



To Select A MIDI Parameter To Edit:

- Select the View Channel you want to edit
- Point to the Curve Type Selector to the right of the Curve Display
- Click to cycle through the following MIDI parameters:

ATK VEL	(Attack Velocity)
REL VEL	(Release Velocity)
POLY PRES	(Polyphonic Pressure -- by note)
CHNL PRES	(Channel Pressure -- After Touch)
CTRL CHG	(Control Change -- 0 to 120)
PTCH BND	(Pitch Bend)

To adjust the Control Change numbers or the Polyphonic Pressure note, point to the figure or symbol that needs changing and use the Left and Right mouse buttons to decrement or increment the values until you've reached the one you want.

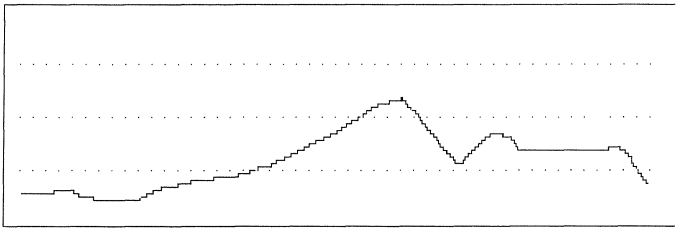
Each of these MIDI parameters are displayed according to how they relate to MIDI; in other words, Velocities are shown as individual vertical lines on a scale of 1 to 127 above each note they affect; Pitch Bends are shown a gradiated curve, the center grid line denoting the 0 point of the bender; Sustain Pedal (MIDI control number 64) displays either ON or OFF. It depends on which parameter you're dealing with as to how it is displayed on the Curve Display. Editing them remains the same however.

Editing the parameters is done by DRAWING a graphic shape of the way you would expect to see the parameter perform. For example, if you wanted to draw a crescendo, you would draw a rising line.

Drawing Free Hand vs Rubber Band

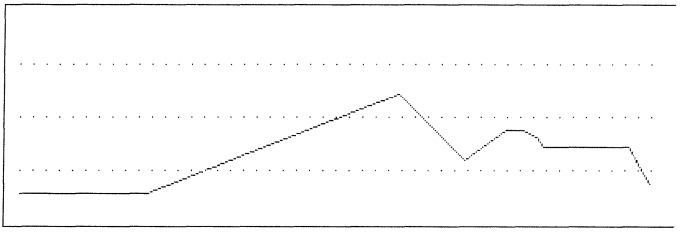
There are two methods of drawing: FREE HAND mode and RUBBER BAND mode.

FREE HAND mode is accessed by pointing the mouse to where you wish to begin drawing in the Curve Display, Long-Clicking and holding down either button. As long as you hold down the button, you can draw any curve or line you choose.



When you're satisfied with the graphic representaion you've outlined on the screen, release the button. You'll be prompted in the Click Mode Display to AFFIRM your decision to alter the data. Left button AFFIRMS, Right button CANCELS.

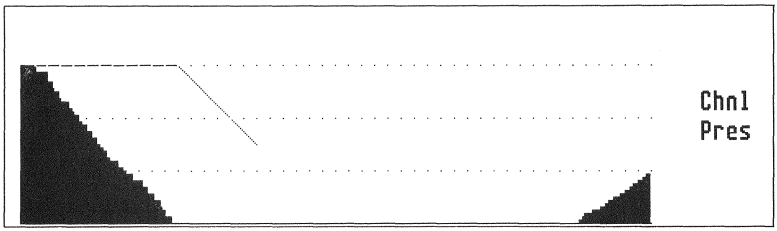
RUBBER BAND mode is accessed by pointing the mouse to where you wish to begin drawing in the Curve Display and Short-Clicking with either button. As you move the mouse, a straight line will stretch from the original location and follow the mouse around like a rubber band.



You can draw angles using this mode by positioning the angle the way you want it and clicking with the Left button. This anchors the line wherever you clicked, but allows you to keep on drawing. As long as you click with the Left button you can keep anchoring and drawing as much as you like. As soon as you're satisfied with the graphic representation of the edit, click with the Right button. You'll be prompted in the Mode window to AFFIRM your decision to alter the data. Left button AFFIRMS, Right button CANCELS.

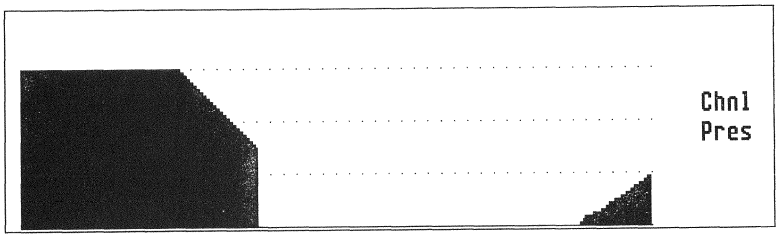
Return vs Retain

When drawing continuous parameters, such as Pitch Bend, the way the ending of that parameter is drawn depends on which button you use to access either mode of drawing. For example: when you first draw a Pitch Bend, the end of the graphic will continue to extend out using the last value in the bend (if you want to have your synth in the correct key, be sure to end at the zero crossing, otherwise it will be slightly out of tune or in another key altogether).

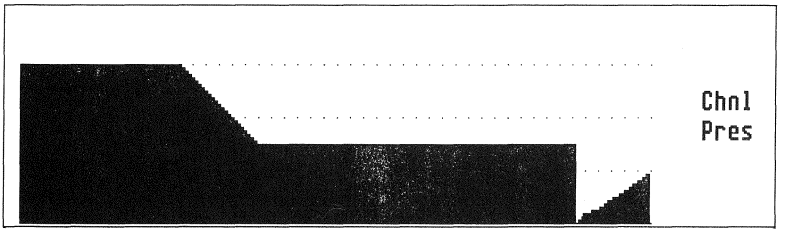


If you edit the bend, the Left and Right buttons perform different functions.

To RETURN to the previously drawn Pitch Bend at the end of the edit, use the Left button to enter into a drawing mode. This can cause an abrupt jump of the graphic screen, depending on how far away you are from the original point when you complete your edit.



To RETAIN the last point of the edit, meaning the graphic will NOT return to the previously drawn point, but stay on the last edit point, use the Right button.



Keep in mind this has to do with the motion of the bend. You will RETAIN the last point, up to the moment there is a change in the MIDI parameter, at which time you'll immediately shift to that position. If you play around with the Left and Right buttons for a while to get the concept of what each of the buttons does, it starts to make a lot more sense.

Curve Drawing In ZOOM Resolution

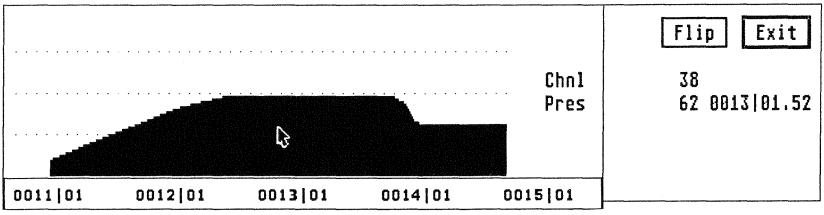
When drawing something like a Pitch Bend, you have to keep in mind what effect resolution has on the sound. If you were to zoom out fully and draw a bend across a period of 100 beats, when you began to zoom in you'd see a more pronounced jagged line, a staircase effect, rather than the smooth curve you drew when you were zoomed further out. This will also sound jagged, as the frequency is actually instructed to change each time there is a pixel level change on the screen. So what looked like a smooth curve 100 beats out might actually have steps 3 beats apart. You can examine the effect the bend (or whichever parameter you're dealing with) is going to have against the note or notes by zooming in.

The reverse is true as well. If you draw a bend over a 4-beat phrase, you'd never have been able to draw it fully zoomed out. So the screen resolution has a strong effect on the accuracy of the edit. You'll have to choose the resolution most conducive to your musical needs.

There can be such a thing as "too accurate". There are only a certain number of events that can be sent across MIDI in a given amount of time. Unnecessarily drawing curves when fully zoomed in may in certain cases lead to MIDI saturation. (See Thinning Out Controllers -- Appendix A.)

Curve Information Display

The Curve Display shows Value (vertically) versus Time (horizonatally). The Values range from 0 to 127, *except 2 to 127 for velocity*, and *-8192 to +8064 for pitch bend.*



When the mouse is in the Curve Display, the Information Display shows:
Time: where the mouse is horizontally in Time (shown as 0002|02.74)
Curve Value: the Value of the curve at that Time (shown as 54)
Mouse Value: the vertical Value of the mouse (shown as 28)

If there isn't a Curve Value, it isn't displayed.

Watching the Information Display while drawing can make it much easier to draw precise curves.

Release Velocity

Many keyboards do not output this parameter, so it will not be recorded. If you want to edit the Release Velocity on the Graphic Screen (if you had a synth module that responds to it, for example), the procedure is as follows:

- Exit the Graphic Screen
- Select Velocity Adjust from the Edit menu
- Select Release Velocity and Set options
- Set the Release Velocity to 64
- When you process the track, each pseudo Note Off event (Note On with velocity of 0) will be changed to a "real" Note Off with velocity at 64
- Save the edited track

You can now return to the Graphic Screen and draw the Release Velocity curves or edit Release Velocities of individual notes.

FLIP

There is a button at the top of the Graphic Screen labelled "Flip". You press this button to "switch" to the Text Editing Screen. The Text Edit Screen also has a Flip button to return to the Graphic Screen.

Clicking on Flip will take you directly to the other editing method. The Start Time at the first measure shown on the Graphic Screen is transferred to the Text Screen.

The Key Command for Flip is **Esc** (Escape).

The selected Play Channel is inherited both ways between the Graphic and Text Screens when you Flip. It initially inherits the Channel from the Track Output Channel when you enter either edit screen.

Details on Text Editing are described next in Chapter 8.

"Uses To Flip Over"

The list below is not complete. It is just a few suggestions for using the Flip option. They are usually parameters that can not be logically displayed graphically.

- Patch Changes
- System Exclusive messages
- Single Control Change Events
- Song Position Pointer
- Start / Stop / Continue Events
- To see the order of multiple events on the same tick

To further understand the Text Editor, please read on to the next chapter.

CHAPTER 8
TEXT EDITING

In This Chapter:

- Text Editing Overview
- Moving Around The Event Screen
- Event List Tour
- Columns
- Arrows
- Edit Buttons
- Inserting / Deleting Events
- Flip
- Understanding Events
- Event List Notes

Key Words:

- Hex
- MIDI Event
- Pixel

TEXT EDITING OVERVIEW

MidiTrack ST incorporates sophisticated editing techniques that allow you to examine and/or fine-tune your tracks using the Text Editor. This method provides you with a variety of ways to Inspect and modify your music recording and other parameters that could not otherwise be edited Graphically.

The Text Editor makes it possible to Insert, Delete, or change any MIDI Event.

Without using graphics, there are many ways to do powerful editing. Certain Events just don't intuitively make sense graphically. Those Events can be edited on the Event List.

There are many Track Types in MidiTrack ST.

- MIDI Tracks — contain MIDI information (Note On, Velocity, etc.)
- Chain Tracks — contain information about Chaining Sections.
- Meter Tracks — contain information about meter changes.
- Tempo Tracks — contain information about tempo changes.
- Shadow Tracks — contain a pointer which points to another (MIDI) track.
- Empty Tracks — these contain nothing. All tracks default to Empty.

The only Track Types you can edit using the Text Editor are either MIDI Tracks, Shadow Tracks, or empty tracks.

To Access The EVENT LIST:

- Select Event List from the Inspect menu
- If you Left Click on an empty track, a blank Text page will appear
- If you want to Edit a MIDI track, select which track to edit:
  -- Point to the track you want to inspect
  -- Press the Left mouse button
  -- You will see the event listing for that track

MOVING AROUND THE EVENT SCREEN

The Event List allows you to view 18 separate MIDI events (rows of information) at a time. To the left of the screen is a Scroll bar, which lets you move through the list. The position of the scroll bar reflects *time*, not the numbers of events.

Scroll Bar

The top and bottom arrows scroll by events. The Slider Bar allows you to quickly move anywhere there are events. The Slider is relative to time. If the Slider is inactive, it is due to the fact there is nowhere to move in time. However, it might be possible to scroll to more events (using the Up/Down scroll arrows) if many events have the same Event Time.

When the slider is active, click above the slider to scroll up 18 events per click. Click below the slider to scroll down 18 events per click. Drag the slider to pick a new Start Time. Drag to the top of the scroll bar to edit the beginning of the track. Drag to the bottom to edit the last event on the track. Any position in between is proportional to the time within the track.

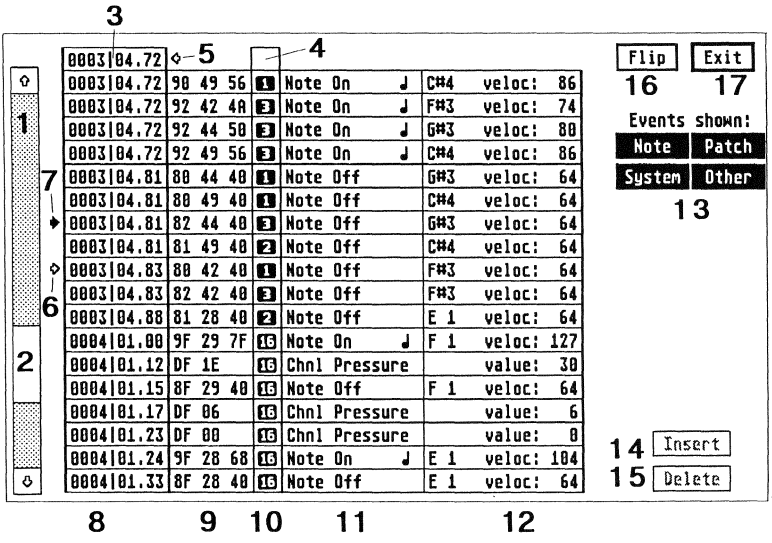
By changing the Start Time (at the very top), and Left-Clicking on the little black arrow that appears, the Event List will start its listing from that time.

To Scroll Through The Events:

- Click Up Arrow to scroll up one Event
- Click Down Arrow to scroll down one Event
- Click and Drag Scroll Box to scroll to a relative position
- Left Click Below the Scroll Box to scroll down 18 Events (one page)
- Left Click Above the Scroll Box to scroll up 18 Events (one page)
- Right Click Below the Scroll Box to scroll down 9 Events (half page)
- Right Click Above the Scroll Box to scroll up 9 Events (half page)
- Set the Event List Start Time, Left Click Arrow to go to an exact time

EVENT LIST TOUR

The following is a screen showing the Event List Screen.



1 Scroll Bar

2 Scroll Box

3 Event List Start Time

4 Click-Play MIDI Channel Output

A Arrows

5 Start Time Arrow

6 Insert / Delete Arrow

7 Event Changed Arrow

B Columns

8 Event Time Column

9 Hex Column

10 MIDI Channel Column

11 Event Type Column

12 Event Data Column

C Edit Buttons

13 Display Options

14 Insert Button

15 Delete Button

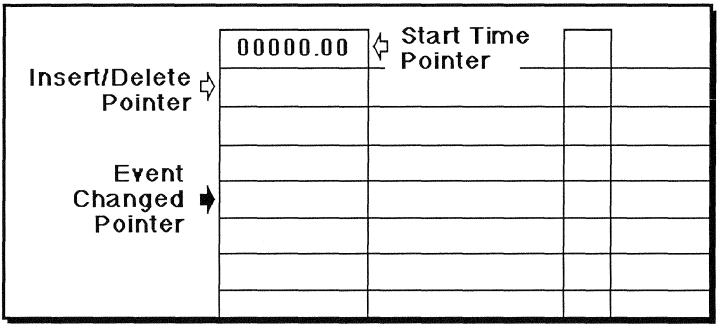
16 Flip Button

17 Exit Button

The information you see on this screen is all the MIDI data recorded on the track you selected, including MIDI Control Changes, Pitch bends, etc. in addition to Note On and Off events.

ARROWS

There are 3 arrows used in the Event Editor Screen: The Insert/Delete Arrow, the Event Changed Arrow, and the Start Time Arrow.



Start Time Arrow

The Start Time could be thought of as the time where the first Event will be listed from. The Start Time Arrow selects this time and activates it.

Whenever you change the Start Time, the Start Time Arrow becomes a solid black arrow. When this occurs, no other changes can take place until you Save (Left) or Cancel (Right) the Start Time.

Insert/Delete Arrow

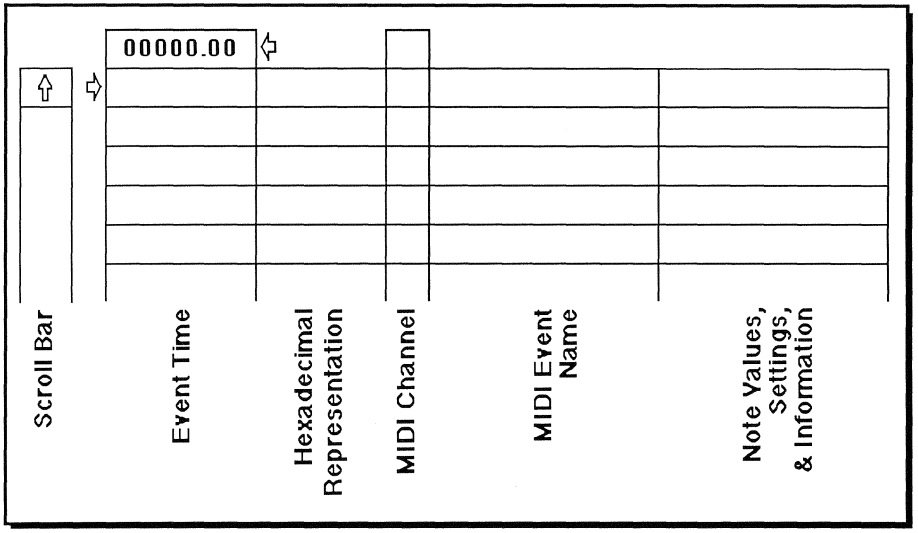
This arrow is the place where the next Insert or Delete will take place. This Arrow can be moved up/down by clicking the mouse anywhere in the column between the Scroll Bar and the Event Time (or press the up/down arrows). If you scroll up/down a whole screen and the Insert/Delete Arrow disappears, you can not Insert or Delete until you click somewhere in its margin to replace it.

Event Changed Arrow

Whenever you change any Event, this solid black arrow will appear before the line where the change was made. To Save the changes made to the Event, click on the black Event Changed Arrow with the Left Mouse Button (or press the Insert key on the keyboard). To Cancel the changes and revert back to the most recent version of the changed Event, click with the Right Mouse Button (or press the Clr Home Key).

COLUMNS

The event screen consists of 6 columns (including the scroll bar).



Event Time

This represents the time which the Event takes place. It is the same time at which the event occurs when the Control Display reaches the same time. It is possible to move an Event in time. Click on the digits and Save the changes (see Event Changed Arrow). It is possible for the new Event to now be off the screen. Scroll to the new time to view the Event.

Hexadecimal Representation

Each MIDI event has its own hexadecimal value. It can be up to 3 bytes long. All of the information that is given in a 3-byte hexadecimal number is all any MIDI instrument needs to determine what kind of MIDI event is being sent. That is what makes MIDI so universal. (See hexadecimal vs. decimal section)

MIDI Channel

Most events have MIDI Channels assigned to them. This tells MidiTrack ST which channel to send to the information out on. With the exception of System messages, all other Events' MIDI Channel assignment can be re-assigned to a different MIDI Channel (Track Channel Assignment).

Notice the Start Time has its own MIDI Channel. This is inherited from the MIDI Channel assignment given to the Track on the main screen. It can be reassigned from within the Event List to affect the Playback Output assignment; but it only stays in effect while in the Text Editor.

MIDI Event Type

This is the name of the MIDI Event type. The different names of Events can be found by clicking on Insert. After clicking on Insert, even more Events can be listed by clicking Other.

The Event Name can't be changed.

The Quarter Note Play icon, which appears next to the Note On type of event, allows you to hear any Note On information with the current setting of Velocity at a fixed duration of about 1/3 second. Click on the Quarter Note to hear a sample of what the note will sound like.

Event Data

There are many different values that could go in this column. They range from telling your MIDI instrument what the velocity of a note will be to how far a pitch bend value will bend.

Here are a few examples of what you might see in the Event Data Column:

NOTE
This is one of many types of MIDI Events. The NOTE setting corresponds to the second pair of numbers in the Hex column ranging from 00 to 7F (C-2 to G 8).

Within the Event description column, when the event is a Note On and the velocity is greater than 0, you will see a Note icon in the column. By pointing at this icon and clicking, you will hear the note played, including the velocity level. You will not hear the correct duration of the note, as that is defined by a subsequent Note Off event, or by a later Note On event with the velocity turned off.

Most of your sequencing activity is going to be concerned with notes of music.

Let's look at this subject of Note Ons and Offs a little closer. There's a rule here: If there is a Note On, that note will keep playing until there is a subsequent Note Off. This as is true in the acoustic world as it is in the digital realm, it just is taken for granted on acoustic instruments. For example, a Trumpet player begins to play a note by blowing in the horn's mouthpiece (Note On), the note keeps sounding as he blows into the trumpet, and only stops making noise when he runs out of breath (Note Off). If the trumpet player could blow forever, that note would keep right on sounding as well, because the instrument would continually respond to the fact that it was being played (no Note off command was being issued).

Another way to get the trumpet to stop playing a sound, however, would be to tell the player to blow so softly that there was no resonation in the mouthpiece or bell. Although this is still equivalent to a Note On command (he's still blowing air), the velocity of the note is set to 0 (there's not enough breath to register sound).

You may therefore see on your Event screen a lot of Note On's, but NO Note Off's. If you inspect the Event data column, you'll see that many of the Note Ons have a velocity setting of "OFF". This is a pseudo Note Off command that many synths output instead of true Note Offs, but works the same way as a Note Off does. When we use the term Note Off in this text, then, we are referring to the action of instructing the previous Note On to cease putting out sound, whether it be by an actual Note Off command, or a psuedo Note Off as described above.

The next thing to remember is that the Note On command must PRECEED the Note Off. This may seem silly, as all Note Off's follow Note On's, but when editing, if you shift the Note On to a point LATER than the Note Off, you'd better move the Note Off as well. Otherwise, when you play your track, the computer is going to pass by the Note Off first, and THEN come to the Note On. Because there is no subsequent Note Off, the note just plays on...and on...and on.

Similarly, the Note Off must be the same NOTE as the Note On. This means that when editing, you have to remember that when you alter a note's pitch, you also have to locate the corresponding Note Off (the Note Off that is paired to the Note On), and change that pitch as well.

The technique of matching up Note Ons and Offs involves finding the pair BEFORE you start editing the note. It's not too hard pairing up Note Ons and Offs when they follow each other, but when you've got notes sustaining across chords, it can get a bit tangled if you don't take that extra second or two before you start editing the note to spot the corresponding Note Off.

To edit a NOTE, point the mouse at either the letter (A-G), the number (-2 through 8) or the accidental (Sharp or Flat). By using the mouse buttons, you can cycle through any note. By pressing the note icon you can hear the note you've selected. (As a reference point, C3 refers to Middle C on a piano).

VELOCITY
This tells the instrument how "hard" the Note On event should be played, the numbers corresponding to the third pair in the Hex column. The number 127 is the highest, number 1 the lowest (0 is equivalent to Note Off). A more complete discussion about velocity and its effects is found in Chapter 5, VELOCITY ADJUSTMENT.

You may only increment or decrement by a single number using the Left and Right buttons while pointing at the velocity indicator. To move by larger amounts, point to the third pair of numbers in the Hex column, and use the first of these two digits for coarse adjustment (16 value increment/decrement).

CONTROL CHANGE
This instructs the computer as to WHAT CONTROL CHANGE NUMBER it should trigger, corresponding to the second pair of numbers in the Hex column. You'll find a list of some MIDI control change numbers used by synth manufacturers in Chapter 5 (Replace Every). These controllers consist of things like sustain pedal, breath controllers, MIDI volume, etc. Some of these controllers you may find a bit difficult editing in the Edit List mode, only beacuse there is so much MIDI information to adjust. Something relatively easy, like a sustain pedal that is either on or off, is fine, but when you start dealing with continuous controllers like a mod wheel, after touch or MIDI volume, you'll be better off editing on the Graphic Screen (See Chapter 7).

PATCH CHANGE
This tells the instrument to change to a particular patch. The patch number is displayed according to the Patch Numbering (see Chapter 6) you've set up for the Play Channel shown at the top of the screen, or (if the Play Channel is blank) for the Event Channel of the Patch Change event.

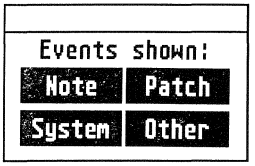
If Patch Numbering is set up for a particular MIDI Channel, it may affect the way the patch number is displayed. For example, if you set up 2 banks of 8, then the max digit for a patch is 16. Any value above 16 in this example, would be displayed as **max**.

To Insert a Patch Change, first insert any number, then Edit the Event to get the desired number.

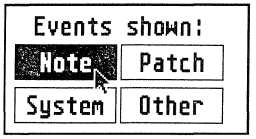
EDIT BUTTONS

Display Options

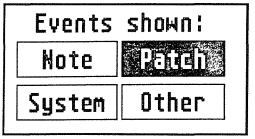
Any combination of these 4 buttons can be selected. When activated (black), the Event Screen will list all events of the selected type.



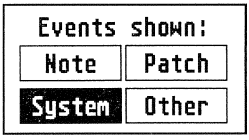
When all 4 Options are selected (black), all MIDI Events will be shown. Conversely, if all 4 Options are Off (white), nothing is listed.



Only Note On & Note Off Events are listed when Note is selected as the Events Shown Option.

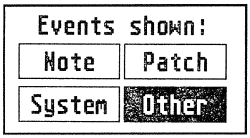


Patch information includes all patch changes that occur throughout the track.



There are many MIDI events that function as system type information. When system is selected, only the following Event Types will be shown:

- **Song Pos Ptr**
- **Song Select**
- **EOX**
- **Clock**
- **Start**
- **Continue**
- **Stop**
- **Sys Ex ID**
- **Sys Ex Data**
- **Tune Request**



All of the Other MIDI Events can be listed by clicking on Other. These Events include::

- **Control Change**
- **Chnl Pressure**
- **Local Control**
- **Mono Mode**
- **Poly Mode**
- **Pitch Bend**
- **Poly Key Pressure**
- **Omni Off**
- **Omni On**
- **All Notes Off**

Insert Button

With the Insert/Delete Arrow next to the Event you want to Insert before, click on Insert. A list of MIDI Events will be displayed along the Event Button column. There are even more Events to choose from. Click Other.

Select all the correct information you want to Insert. Some Events need more information than others. When the last needed information has been selected, the Event will be be Inserted. All of the other Events will be moved down 1 space and the Insert/Delete Arrow is ready to Insert the next event. (Notice the time given to the Inserted Event is the same as the time the Insert/Delete Arrow is now pointing at.)

Once you start Inserting an Event, you must finish setting all of the values. If you want to change a value you have already set, complete the Insert and change the Event afterward.

Delete Button

With the Insert/Delete Arrow selecting the Event you want to Delete, click Delete. The Event will be deleted and all Events below that Event will move up.

Flip Button

There is a button at the top of the Text Screen labelled "Flip". You press this button to "switch" to the Graphic Editing Screen. The Graphic Screen also has a Flip button to return to the Text Edit Screen.

Clicking on Flip will take you directly to the other editing method. The Start Time shown on the Text Screen is transferred to the first measure of the Graphic Screen.

The Key Command for Flip is **Esc** (Escape).

The selected Play Channel is inherited both ways between the Text and Graphic Screens when you Flip. It initially inherits the Channel from the Track Output Channel when you enter either edit screen.

Details regarding Graphic Editing are described in Chapter 7.

Uses To Flip Over

The list below is not complete. It is just a few suggestions for using the Flip option. They are parameters that can be displayed graphically.

- Move notes while keeping duration constant
- Easily draw in a new Note
- Redraw Pitch Bends, Control Change curves, Velocity curves
- Erase large regions of a track
- Play a portion of the track you're editing

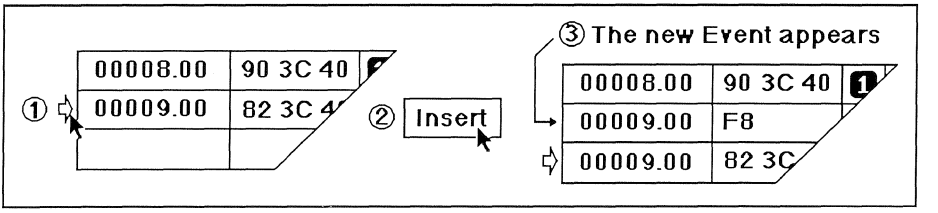
Exit Button

The Exit button quits the Event Editing. You will then be asked to save the Event information on any of the 60 tracks by selecting the track and clicking the Right Mouse Button. If you have a problem saving the Events, see **Event Editing Notes** at the end of this chapter for a possible solution.

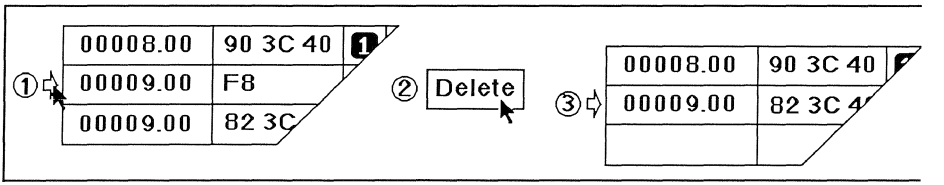
USING THE EVENT LIST

There are 3 basic functions the Event Editor performs:

1 Insert an Event before the line where the Insert/Delete Arrow is located.



2 Delete the Event directly next to the Insert/Delete Arrow.



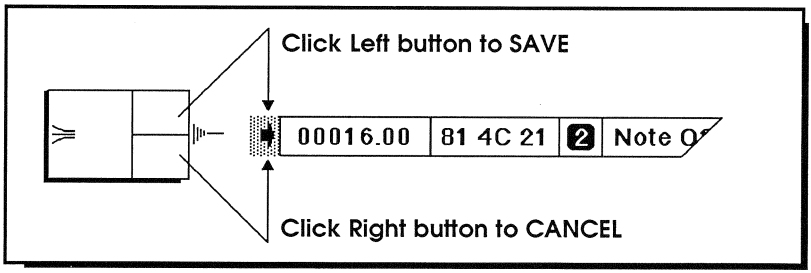
3 Change an existing Event by clicking on the value you want to change. You may click on the actual value or the Hexadecimal value. Once changes have been made to any Event, you may NOT change any other Event, Insert or Delete, or scroll Up/Down until you click on the Event Changed Arrow with:

- The left mouse button to Save all changes made. Once you click on the Event Changed Arrow with either button, you may then make changes to another Event.

  Key Command for Save Changed Event is the Insert key.

- The right mouse button to Undo all of the changes and return the Event to its original state before changes were made.

  Key Command for Cancel Changed Event is the Clr/Home key.



Inserting Or Deleting Events

You can insert MIDI events of any kind into the Event List.

The INSERT and DELETE Icons are at the bottom right hand portion of the screen. They will stay active as long as the Insert/Delete Arrow is present, and provided you are NOT currently editing an event. The arrow will disappear off the screen if you scroll outside the current 18 Event rows and the icons will grey out, indicating their deactivation. If you do deactivate the INSERT/DELETE buttons, simply point to the left of the location column and click; the arrow will appear and the icons will reactivate.

To Insert An Event:

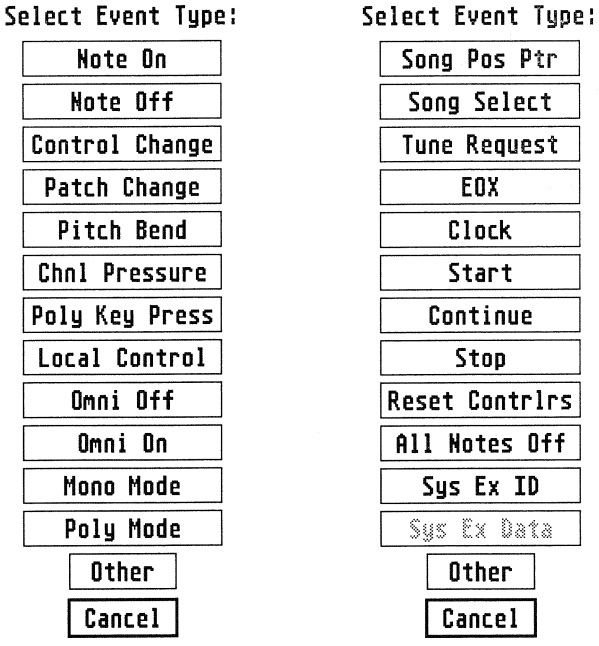
- Position the arrow next to the location number closest to where you want to place the Event (don't worry if the exact time doesn't exist; as soon as you've created and inserted the event, you can simply edit the time to be exactly where you want it)
- Click the INSERT icon and you will see a list of event types appear to the right of the Event List.

To Delete An Event:

- Position the arrow next to the Event you want to erase
- Click the DELETE icon and it's erased
- The following events automatically readjust themselves, jumping up one row to take the deleted Event's place

By choosing any of the MIDI events listed, and making additional choices from subsequent dialog boxes depending on the event you select, you can insert any kind of MIDI event you like. For example, if you want to insert a Note On, point and click to that item in the list. You'll next be asked the MIDI channel for that event, which note and octave placement and what velocity to set it at. When you're done answering each question, the Note On event will be inserted in the Event list at the arrow.

Not only Note On or Off messages can be inserted. Other MIDI Messages can be imbedded within your track as well. You could insert a Tune Request at the beginning of the track, for example, to insure all your analog synths tune up.



Editing Existing Events

Any information you can see on the screen you can edit directly (with the exception of the Event description, which simply describes the event you're viewing in words).

To Edit Any Event:
- Point to the number you want to change
- Click with the Right button to increment
- Click with the Left button to decrement
- An Event Changed Arrow appears to the left of that row. This is to indicate that something has been edited within that event.

Before you can edit another event, you must first determine whether or not you want to save the alterations you've made on the current event. You can continue changing and editing as much as you like on the current event, but if you want to continue beyond that, you'll need to first decide what you want to do with those changes.

- To SAVE the edits you've made press the Left button
- To CANCEL the edits and reset the event to it's original state, press the Right button.

To SAVE the edits you've made using the ST keyboard, press the INSERT key. To CANCEL the edits you've made, use the CLR/HOME key.

Left button	or	INSERT key	=	SAVE
Right button	or	CLR/HOME key	=	CANCEL and reset

This is similar to the interface you use with the Event Start Time; Left saves the counter changes, Right cancels them and resets the number to its original state.

Once you've saved or cancelled the edit, the Edit arrow will disappear, and you can now edit another event.

Any changes you make to the Hex column will be reflected in the related numerical column to the left of the Hex column and vice versa. The information you see on the screen is the actual MIDI data the computer is working with; the Hex column shows how the computer looks at in its translation of music to numbers. You don't need to be able to read Hex in order to use this column; just playing around with it for awhile will show you which columns affect what MIDI parameters.

SYSTEM EXCLUSIVE

System Exclusive (Sys Ex) could be defined as "additional MIDI information specific to each MIDI instrument" or "Instrument Exclusive".

There are many standard MIDI Events (Note On, Note Off, Velocity, Pitch Bend, etc). But in addition to those, there are also events that are only understood (Exclusively) by a specific instrument (System).

MidiTrack ST is best designed to transmit short System Exclusive messages in its real-time environment.

For example, on some keyboards, you can send a message to put the keyboard in or out of split mode. Another example might be a Sys Ex message to change one specific parameter on a reverb unit (add more and more delay perhaps).

The most commonly thought of use of System Exclusive is individual or bulk patch/sample storage. MidiTrack ST can handle bulk dumps, but there are limitations:

- Uses 4 times as much memory as GenPatch ST to store patches
- MIDI can not send any other data in the middle of a bulk dump; yet MidiTrack ST will keep the counter running while sending Sys Ex (although the counter on the screen won't be updated until it's done). The sequence may pause for a number of seconds when a bulk dump is sent, and no music can be played at that time, even on other instruments.

MidiTrack ST can theorectically handle bulk dumps, but this is not an appropriate use for this feature.

Details on System Exclusive messages should be found in each manufacturer's instrument manual. Once you know what and where the data is, putting it in MidiTrack ST is easy.

Sys Ex Recording

- Select Input Filters from MIDI menu.
- Enable System Exclusive (defaults to disabled).
- Once Enabled, MidiTrack ST will record all Sys Ex messages it receives, the same way it records any other information.
- Because Sys Ex messages can be quite long or contain large amounts of data, it is recommended that you ***record Sys Ex messages in Step Time***. They can be recorded while the sequencer is playing, but it is possible that the data transferred may have errors because of the great amount of data being sent in a short time. You may also want to Disable the Mouse (see Appendix A) if recording long Sys Ex messages.

Notes For System Exclusive

- *All parts of each Sys Ex message are recorded with the same time value (same tick) to insure the message doesn't get broken up during playback.*
- *The Track Channel assignment is ignored because Sys Ex has no general provision for specifying a channel. The format of a Sys Ex message is specific to one particular instrument, and may include a channel number encoded somewhere in the message.*
- *You can not do anything to the sequencer while it is in the middle of playing a Sys Ex message. Remember, it is considered 1 message; once it starts, it must be completed.*
- *Erasing a Region on the graphic screen does not erase Sys Ex messages because the program does not know which specific channel (if any in particlular) the message is designated to end up on.*

How Sys Ex Is Stored

An actual MIDI System Exclusive message starts with an F0 (hex) byte, followed by a Manufacturer ID (1 byte if non-zero, 3 bytes if the first byte is 00), any number of data bytes (manufacturer-defined), and (optionally though usually) ending with an EOX (End-of-Exclusive) byte -- F7 (hex) -- which is technically a separate message.

MidiTrack ST breaks each Sys Ex message into 3 parts:
-1- Sys Ex ID (consisting of the F0 and the first byte of the Manufacturer ID)
-2- Sys Ex Data bytes (each "event" holds 1 byte)
-3- EOX (End of Exclusive)

On the event list, each of these "events" is listed on a separate line.

Sys Ex Event Editing

Due to some rules of System Exclusive message structure, there are some things you should be aware of when editing Sys Ex events using the Event List Screen.

All "events" associated with one Sys Ex message are recorded on the same tick and cannot be split up. Therefore, only the Sys Ex ID event can be moved in time. When that is done, all subsequent contiguous Sys Ex data and EOX events are moved with the ID event.

The "ID" byte and the "data" byte of the Sys Ex Data bytes are only editable in HEX values.

Deleting Sys Ex Events

- If a Sys Ex ID event is deleted, all subsequent contiguous Sys Ex Data and EOX events are deleted along with it.
- Sys Ex Data events can be deleted individually.
- An EOX event can only be deleted by itself if it is not associated with a Sys Ex ID or Data event.

Inserting Sys Ex Events

- Sys Ex Data events can only be inserted:
  - After a Sys Ex ID Event
  - Before or after another Sys Ex Data Event
  - Before an EOX
- Sys Ex ID events and EOX can be inserted anywhere except in the middle of an existing Sys Ex message

UNDERSTANDING EVENTS

What is a MIDI Event?

A MIDI Event is a single command that changes the current state of your MIDI instrument. This could be generalized by saying any parameter your MIDI instrument can send via the MIDI cable is a MIDI Event.

Every time you play your MIDI instrument, a minimum of two MIDI Events take place: Note On and Note Off. Think of each key on your keyboard as an ON/OFF switch where Down is ON and Up is OFF.

Other events could be transferred in between Note On and Note Off Events.

There are 2 kinds of MIDI events in general:

(1) Channel Events

Note On
Note Off
Control Change
Program (Patch) Change
Aftertouch (Pressure)
Pitch Wheel

(2) System Events

System Exclusive
Song Position Pointer
Song Select
Tune Request
End Of Exclusive (EOX)
Timing Clock
Start
Continue
Stop
Active Sensing
Controller Reset

Hexadecimal vs. Decimal

The number system most people are familiar with is the decimal system. This counts from 0 to 9. Like an odometer, the place value goes back to 0 and the next place increments by 1. Below is a table showing how numbers are given a value. The x represents the number that is located in that position.

...	fourth place		third place		second place		first place	
...	$x X 10^3$	+	$x X 10^2$	+	$x X 10^1$	+	$x X 10^0$	Decimal
...	$x X 16^3$	+	$x X 16^2$	+	$x X 16^1$	+	$x X 16^0$	Hexadecimal

Let's use this table to add up place values to determine the value of a number in both decimal and hexadecimal. I'll use the number 564. It has three places (digits): the 4 is in the first place, the 6 is in the second place, and the 5 is in the third. When you substitute the numbers in their appropriate places and do a little math, you can figure out the value of the number. Notice that the same number has a different total value when used in the different number systems.

third place		second place		first place			
$5 X 10^2$		$6 X 10^1$		$4 X 10^0$			
500	**+**	**60**	**+**	**4**	**=**	**564**	(value of Decimal 564)
$5 X 16^2$		$6 X 16^1$		$4 X 16^0$			
1280	**+**	**96**	**+**	**4**	**=**	**1380**	(value of Hexadecimal 564)

This method could be used to figure out the value of any number in a number system. Each numbering system is determined by how high the digits count. In Binary, for example, the digits included are 0 and 1. That's it. Two digits that represent all values. Here are the first 32 values in all three number systems. See if you can continue up to 50.

Binary	Decimal	Hex	Binary	Decimal	Hex
00000000	0	00	00010000	16	10
00000001	1	01	00010001	17	11
00000010	2	02	00010010	18	12
00000011	3	03	00010011	19	13
00000100	4	04	00010100	20	14
00000101	5	05	00010101	21	15
00000110	6	06	00010110	22	16
00000111	7	07	00010111	23	17
00001000	8	08	00011000	24	18
00001001	9	09	00011001	25	19
00001010	10	0A	00011010	26	1A
00001011	11	0B	00011011	27	1B
00001100	12	0C	00011100	28	1C
00001101	13	0D	00011101	29	1D
00001110	14	0E	00011110	30	1E
00001111	15	0F	00011111	31	1F

Enough Math 101. Back to MIDI.

How MIDI Events Are Stored

Midi Events are stored in Hexadecimal form. One Event could be stored as up to 3 bytes. A byte is two hexadecimal digits. (Ex. **F7** is a byte.)

A good example of this might be the first Note On Event you see when you load the sample song (SAMPLE.SNG) from the MidiTrack ST disk. The first column of numbers is the time at which each MIDI Event takes place. The second column is a Hexadecimal representation of the current MIDI Event. It looks like this:

90 32 58

This is the MIDI Event for a Note On, MIDI Channel 1, Note D in the second octave, with a Velocity of 88.

The first digit is the MIDI Status Event. A 9 represents a Note On Event. The 0 is a Hexadecimal value for the MIDI channel. If you count 0 - F as 1 to 16, this is MIDI Channel 1. The 32 represents the note. The 58 is the Velocity. Click on each of these numbers to see which other values change and by how much.

Some MIDI messages are represented by only two bytes. For example,

C9 20

tells a MIDI instrument receiving on MIDI Channel **10** to change to patch number **32**. MIDI internally numbers patches 0 - 127 Decimal (0 - 7F Hexadecimal).

EVENT LIST NOTES

- One way to change an existing MIDI Event to another type of event is to Insert a new event at the selected event, then delete the old event. The Insert/Delete Arrow will have moved down and will be ready to Delete the desired event.

- Pressing Return will not Exit Event Editing if there is an Event Change in progress.

- If for some reason no Events are shown on a track that should have events on it, or the Event you want to edit doesn't appear on the screen, make sure the proper Events Shown buttons are on. They all default to ON. These button settings are remembered from the last time they were set in this session.

- When creating a track using Events, make sure for every Note On Event that you Insert there is an equal Note Off Event. Otherwise, the Note selected will be stuck On. This is not a bug. It's MIDI Event Editing.

- There are two types of pressure Events, which some instruments call after-touch. By far, the most common is channel pressure, which applies equally to all notes on a channel. The other type of Pressure is Poly Key Pressure.

- Different instruments interpret MIDI information differently. They all understand the MIDI information, but not all instruments are set up to use all of it. For example, many instruments only generate/recognize 128 or 256 steps of pitch bend (out of a possible 16384 steps). Many instruments may ignore release (Note Off) Velocity, Pressure, and/or certain controllers. See your MIDI instrument's owner's manual for value limits.

CHAPTER 9
SYNCHRONIZATION

In This Chapter:

- MIDI Output Options
- Sync Input
- Internal Sync
- MIDI Sync
- External Sync (Input & Output)
  - SMPTE
  - HybriSync
  - FSK
  - Audio Click
  - TTL
  - DIN Gated TTL
  - MidiTrack II/III

Key Words:

- Chase
- Cue List
- FSK (Type O or R)
- Hit Points
- HybriSync
- Jam Sync
- Lock
- MTR
- PPQ
- SMPTE Time Code
- TTL
- VTR

MIDI OUTPUT OPTIONS

You have control over several MIDI output options. All of these options (with the possible exception of Locate Method) are available no matter what Sync Input is used (see next section).

The MIDI spec has a provision for synchronizing to devices over MIDI. It consists of the following:

Start.....tells a MIDI device to start playing from the beginning when it receives the MIDI Clock that follows this event

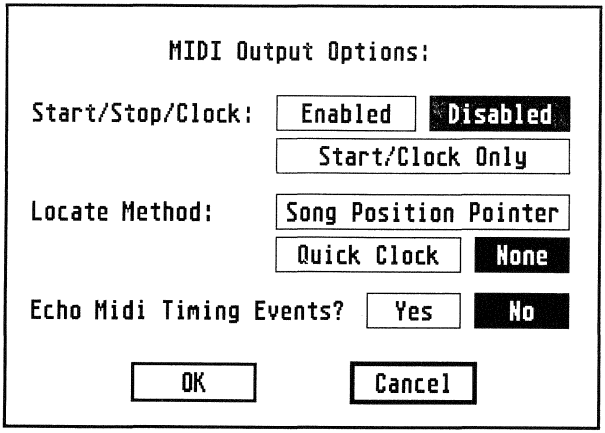
Clock.....tells a MIDI device to advance a 24th of a quarter note

Stop.....tells a MIDI device to stop playing (ignore MIDI Clocks)

Continue.....tells a MIDI device to resume playing (from where it stopped) when it receives the MIDI Clock that follows this event

Song Position Pointer.....tells a MIDI device to locate to the 16th note a specified distance away from the beginning of a song

To Set Up The MIDI OUTPUT OPTIONS:
- Select Output Options from the MIDI menu
- A dialog box lists all of the MIDI Output options available



Start/Stop/Clock

Disabled means no MIDI Clock or related events will be sent. Use this when you want to avoid triggering a drum machine, for example.

Note: If using MIDI Clock Output to drive an "intelligent FSK" ("imitation SMPTE") tape sync box, in order to stripe a tape, make sure you have the Countoff set to ...0 (or Play Without Countoff by RIGHT Clicking on the PLAY button).

Enabled means Start, Clock, Stop, and Continue will be sent, per the MIDI spec, whenever MidiTrack ST plays.

A few drum machines (very few), don't recognize a Stop command, and when one is issued they can tend to get confused. For these devices, the **Start/Clock Only** setting should be used.

MidiPlexer users can select whether to send MIDI Clock Output on port A or port B by clicking on the port letter to the right of the Sync box on the main screen.

Locate Method

Song Position Pointer is available to enable drum machines or other MIDI devices that also have this Sync Type to chase and follow MidiTrack ST.

Quick Clock is a method by which a very fast Clock rate is output allowing certain drum machines to chase to where your song is located.

WARNING:
Some drum machines may crash (even lose their memory contents) if you send them clock too fast. Use Quick Clock **only** if your drum machine doesn't recognize Song Position Pointer. **Back up the data in your drum machine** before trying Quick Clock.

Echo MIDI Timing Events?

Echoing MIDI Timing Events means that if you receive a Start, Stop, or Continue command through the MIDI In, it relays this message to the MIDI Out, almost like the Thru function, but the command is actually reprocessed. This is useful if you're in MIDI Sync and want to drive another device via MIDI Sync. If you want to Output MIDI Sync while receiving MIDI Sync, select **Yes**. (Song Position Pointer is not echoed.)

It defaults to **No** to avoid potential "loop back" situations.

SYNC INPUT

Synchronization refers to one device (Master) providing the timing (Clock) which other devices (Slaves) lock to and follow. Sync input is thought of as "where the timing clock originates". There are 3 Sync Types:

(1) **Internal Sync** This type gets its timing clock from the quartz clock inside the Atari ST. This is the default mode for MidiTrack ST.

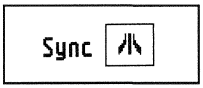
(2) **MIDI Sync** This type gets its clock from another MIDI device. Timing Clocks are sent along with MIDI Events. If a device is set to a tempo of 120 bpm, then it is sending that tempo across the MIDI cable. If a device on the other end of the cable is in MIDI Sync, its tempo will also be 120 bpm.

(3) **External Sync** This type gets its timing clock from an external source (usually tape, video, or film). The different types of external sync that MidiTrack ST will sync to vary and are explained later in this chapter.

There is no External Sync available in EditTrack.

INTERNAL SYNC

There are 3 Sync Types available in MidiTrack ST (2 in EditTrack). Internal Sync is the default and is indicated by the Atari logo in the Sync Selector on the Control Screen.



Internal Sync is a basic timing situation where the Atari ST is the source of the timing. There is a quartz clock inside the Atari ST and all tempo settings are referenced from this internal clock. The Atari ST is the "Master" in this case, where as in all other synchronizing it is the "Slave" to another device's timing system.

MIDI SYNC

If you click inside the Sync Selector box, you cycle through the Sync Types. MIDI Sync (another Sync Type) is indicated by the MIDI plug in the Sync Selector on the Control Screen.

In MIDI Sync, MidiTrack ST no longer responds to its built-in Recording Controls (except KEEP). Instead, it starts, stops, and continues under control of an external timing device ("Master") connected to the Atari ST's MIDI In.

If MidiTrack ST receives Song Position Pointer, it will chase to it.

The MIDI timing events will not be Thru'd unless Echo MIDI Timing Events is enabled (see MIDI Output Options, above).

If MidiTrack ST is recording while in MIDI Sync, it will interpolate between MIDI clocks to maintain 96-tick recording resolution.

EXTERNAL SYNC (INPUT & OUTPUT)

SmpteTrack II ONLY

SmpteTrack II reads and writes many of the popular Sync Types, so as to be compatible with a variety of sync types. SmpteTrack II is compatible with the following Sync Types:

- SMPTE LTC (longitudinal time code)
- FSK
  - Type O (Oberheim)
  - Type R (Roland)
- TTL
  - 24 ppq
  - 48 ppq
  - 96 ppq
- DIN Gated TTL
- Audio Click
- MidiTrack II/III
- HybriSync

SmpteTrack II can Read and Write SMPTE Time Code, which allows bit accurate synchronization to external tapes, videos, or film (2400 cycles/second). Unlike most other SMTPE synchronizers, SmpteTrack II's time code is true SMPTE and *is not converted to MIDI Time Code* or MIDI clock/SPP (24 clocks/quarter note) at its timing input.

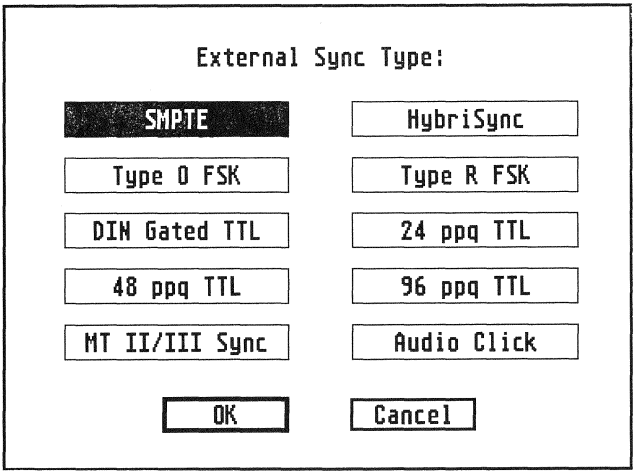
If you click inside the SYNC box, you cycle through the Sync Types (Internal, MIDI, External). EXTERNAL non-SMPTE Sync is indicated by the SQUARE WAVE in the Sync Selector box on the Control Screen. If SMPTE Type is set in the External Sync Type (Box menu), then it shows the current sync type being read (30, DF, 25, 24) instead of the SQUARE WAVE icon:

There are four standard 1/4" jacks on the SMPTEmate:

TAPE IN	From an output of your TAPE recorder to Box IN. It is used for Reading all types of synchronization.
TAPE OUT	From the Box OUT to an input on your TAPE recorder. Used to WRITE SMPTE, FSK, HybriSync, and DIN Gated TTL
AUX IN	Used for the **gate** of DIN Gated TTL Sync
AUX OUT	Used for the various TTL Syncs

All are defined below. The SMPTEmate connections and typical applications are given for each synchronization type.

To SET An EXTERNAL SYNC Type To Read:
- Select Ext Sync Type from the Box menu
- A dialog box appears showing the available external Sync types



- Click on the type you want
- Make connections to the SMPTEmate In/Out jacks (either Tape or Aux)

Type of Sync	Tape In	Tape Out	Aux In	Aux Out
SMPTE	•	•		
HybriSync	•	•		
FSK (O & R)	•	•		
Audio Click	•	•		
TTL	•			•
DIN (Gated TTL)	•	•	•	•
MidiTrack II & III	•			

Note:
When SMPTE, HybriSync or FSK Sync Types are selected as External Sync Types, and None is Selected for the Output Sync Type, the TAPE OUT jack sends a DUB Output of that Sync signal coming in the Input. If you're copying Sync from one tape to another, the TAPE OUT jack will provide a reshaped copy of the sync tone received in the TAPE IN jack, while the sequencer syncs to the sync tone. See DUBBING SMPTE (pg. 9-16) for similar Dubbing instructions.

This is a table describing the combinations of Input and Output that can be achieved at the same time.

The "In" Column is what type of Sync is coming in, and the "Out" row is the cross table. For example, while you are reading and syncing to FSK, you can **never** send out Audio Click, but you can **always** send out TTL.

The abbreviations found in the table are also below.

In \ Out ->	**FSK**	**Click**	**TTL**	**DIN**	**MIDI**
SMPTE	N	N	NWC	NWC	SPP
HybriSync	N	N	A	A	Send
FSK (O & R)	N	N	A	A	Send
Audio Click	N	N	A	A	Send
TTL	N	N	A	A	Send
DIN	N	N	A	A	Send
MT II/III	N	N	A	A	Send
MIDI	N	N	N	N	Echo
Internal	Play	Play	Play	Play	Play/SPP

A	Always
N	Never
NWC	Not When Chasing
SPP	Song Position Pointer is sent if you start past the beginning
Echo	Starts when Echo MIDI is Enabled (MIDI menu, Output Options)
Send	After starting to receive clock from the external Sync Type, it will Send a MIDI Start and Clock
Play	When you PLAY from the beginning, it will output these

SMPTE

What Is SMPTE?

The history of SMPTE time code goes back to NASA, for which it was created to track space missions. SMPTE is an acronym for the group that further developed this code, the Society of Motion Picture and Television Engineers. This time code synchronization method has become the standard in the TV/video industry.

SMPTE time code is basically a real-time clock that can be converted into an audio signal for recording on tape. It's a binary code (ones and zeros) that is transmitted as a series of square-wave pulses: short pulses are considered "1", longer ones as "0". This clock can be adjusted to start at any time and is measured not only in terms of Hours, Minutes and Seconds, but also Frames and Sub Frames. 2400 pieces (bits) of information are generated each second, all of which is recorded on audio tape, and, through electronic decoding means, this data is translated into an understandable and completely reliable sync code.

Because of this high degree of resolution, once you've striped your tape (recorded one track of code on your tape deck), you now have a accurate time reference which external machines can lock up to. As you can find any point of time anywhere on the tape, there's never a need to start at the top of the tape to sync up.

There are four basic SMPTE formats: 30, 25 and 24 frames per second and another format called Drop Frame:

- 30 is the original format developed for monochrome video and is based on a frame rate of 30 Frames Per Second (FPS).

- 25 frame format was developed because this video rate (25 frames per second) is used in European video (also known as EBU or European Broadcast Union format).

- 24 Frame is used primarily for film applications. Film has been projected at 24 frames per second since the early days, and this allows 1 frame of film to coordinate easily with SMPTE code.

- Drop Frame is almost 30 frames per second, but not quite. It was developed for use in Color video, which has a frame rate of 29.97 frames per second. 3/100s of a second is not a great amount, but it will add up over a period of time, causing synchronization errors. To compensate for the discrepancy between the 30-frame Mono rate and this one, the first two frames are dropped every minute, except every tenth minute. By omitting these frames (drop frame), by the time you've reached an hour's time you've accumulated enough automatic correction (108 frames) to stay locked.

SmpteTrack ST reads and writes these four formats of SMPTE time code, and directly locks to it from your MTR (multi-track recorder) or VTR (video tape recorder). This means your sequencing is synchronized exactly, to within 1/2400 of a second, and you don't need any conversion boxes to translate SMPTE into MIDI Clock or MIDI Time Code.

But they couldn't stop there! There is now a fifth variation of SMPTE Time Code. It is a mix between types 30 frame and drop frame. It is called Color Rate, 30.

SmpteTrack has no problem reading this new format.

Using The SMPTEmate Desk Accessory/Program

The SMPTEmate utility is supplied in two forms: as an accessory (SMPTEMTE.ACC) and as a stand-alone program (SMPTEMTE.PRG). You may want to use the accessory version if you need to this utility often. If you only need to use it once in a while, you may prefer to save memory by disabling the desk accessory (by renaming it to SMPTEMTE.ACX *on your backup disk*) and run SMPTEMTE.PRG when you need to write SMPTE time code to tape.

Other than the method used to run them, the accessory and the program version are the same.

The SMPTEmate desk accessory is found on your BOOT DISK. It allows you to read and write SMPTE Time Code to tape. Use this accessory by selecting SMPTEmate from the Desk menu. ***If you can not find your SMPTEmate Desk Accessory on the Desk menu, reboot your computer with your SmpteTrack BOOT Disk in Drive A***, or run the SMPTEmate program instead.

A window containing the SMPTEmate controls will appear in the middle of your screen.

Connect the Tape Out jack of you SMPTE Box to the input of a channel on your mixer or pre-amp. Make proper connections to a track of your audio recorder. We suggest a pre-amp for best results and more signal control, although it is possible to plug directly into a track on your multi-track, video, or other audio recording device.

Connect the output of this track to the Tape In jack, and you're hooked up and ready to go.

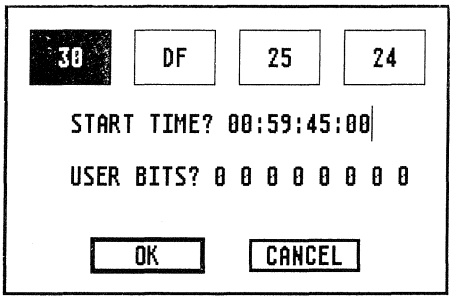
The SMPTE signal is a high frequency. You'll often get bleed to adjacent tracks. With this in mind, it is wise to record your code on an outside track to avoid having the signal cross into the signal of another track.

WRITING SMPTE

The SMPTEmate accessory is controlled by pointing at the functions that are visible within the window and clicking.

To Write SMPTE:

- Click on **Write**
- A dialog box will appear, requiring you to select the time you want your Code to generate when you start, what format you wish to use and gives you eight digits of user Bits that you can use as you wish.



- Select which format to generate (30, Drop Frame, 25 or 24)
- Click on one of these four choices
- Set your Start Time:

  Your Start Time defaults to 00:59:45:00.00 as a majority of video applications start the first frame at 01:00:00:00.00. This gives you 15 seconds of lead time. You can change your start time to any you like by pressing the Backspace or Esc key and typing in the values you want (Hours:Minutes:Seconds:Frames).

User Bits
User bits default to zero, but you can set them. By entering numbers here, you can catalog your tapes by number, or enter in the date as a reference. User bits have nothing to do with synchronization so it is not mandatory you do anything with them.

- Once you've selected your format and start time, click OK

SMPTEmate begins Writing SMPTE Time Code. The **Write** button will be reverse highlighted, so you know what function you're using. The SMPTE Times will be displayed as they are written.

- Click on **Stop** to stop writing SMPTE

Setting Levels
SMPTE is best when recorded at -3 vu to 0 vu on most tape machines. As with any tape sync, it is best to record the sync pulse on an edge track. Also, record as far away from high-level percussive tracks as possible. This will give you the best syncing results.

However, when using +4 db tape machines, -7 vu should be a sufficient level to record SMPTE.

Also, the SMPTE Box outputs SMPTE at +5 vu on professional machines and may need attenuation when recording.

DO NOT EQ SMPTE. Also, if possible, do not use noise reduction on tracks that contain SMPTE. (You should consult your multi-track owner's manual for perfect level settings.)

- Now that you've got your levels set, press the **Write** button a second time
- Put your MTR in record and start it
- Press OK to begin striping your tape with SMPTE

If you click on the **User** button while you're writing, you see the numbers you placed in the User bit section appear. There is no change in these numbers as they're not used for synchronization, but you can see that they are being output along with the time code.

READING SMPTE

If you press the **Read** button, SMPTEmate automatically goes into a wait mode, clearing out the numbers in its counter window. As soon as it detects SMPTE code, it begins reading and displaying it in the window. If you press the **User** button, you see the User bits you entered (see above) and Wrote previously.

The Lap Feature

Another function is available while reading or writing: the Lap feature. This works just like a lap button on a stop watch -- press it and the read out freezes. Press it again and the display begins showing elapsed time again. (Note: This doesn't stop SMPTE output, it just freezes the display. Code continues to go by in real time, and when Lap is pressed a second time, you're updated to the point that SMPTE has gotten to since the time you pressed the button)

Using the Lap button is useful in getting hits off a video tape that doesn't have a visible time code on the screen. Just run the picture by and hit the lap button the moment of the hit, noting down the code after you've done so.

One other feature that helps if you don't know what kind of format you've been given: directly below the SMPTE readout window are boxes for the four different formats. SMPTEmate automatically recognizes which kind of time code it's reading and reverse highlights the box to indicate what the format is.

DUBBING SMPTE

Sometimes you'll want to transfer the time code from a tape to another. It's not a good idea to transfer the code by directly recording the original; it's much cleaner to regenerate fresh code.

There is distortion that occurs when you re-record SMPTE, and by the time you've copied the original signal, the additional noise makes the code unreliable and in some cases unreadable.

SMPTEmate allows you to reshape code using the Dub Mode. Feed the original code to your SMPTE Box, while connecting the Tape Out jack to your audio recorder.

To Dub SMPTE:
- Click on the DUB box
- SMPTEmate goes into wait mode
- Put your MTR in record
- Start the original source of code

SMPTEmate takes the code it sees and writes THE SAME CODE to it's output jack and out to your recorder. Now you've got the same code you were using on the video deck transferred to your MTR without generation loss.

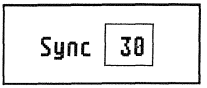
Note:
This is NOT what is known as Jam Sync. Jam Sync will actually repair damaged code by generating fresh SMPTE despite drop outs on the original tape. If the time code has gotten to you in bad shape where portions of it are unreadable, you'll need to lay new code down.

Automatic Dub is also available, while syncing to SMPTE within SmpteTrack II. See the Note in the general External Sync discussion earlier in this chapter.

Synchronizing To SMPTE

Once you've got your SMPTE time code laid down on tape, it's a simple matter to lock up your sequencer to it.

If you click inside the SYNC box, you cycle through the Sync Types (Internal, MIDI, External). If SMPTE Type is set in the External Sync Type (Box menu), then it shows the current sync type being read (30, DF, 25, 24):



External Sync can actually be one of several types, of which SMPTE is the default in SmpteTrack. (See Other Synchronization Methods below.)

Chasing SMPTE

There are two SMPTE Chase Modes in SmpteTrack. The first mode allows you to Chase SMPTE by clicking PLAY or PAUSE. This mode is noted by an equal sign between those two buttons (they equal each other in this mode).

Note:
If you click PAUSE, you'll notice it toggles just like on a cassette deck: clicking once puts it in PLAY, clicking a second time puts it back in PAUSE. The PLAY button has to be ON (black) in order to properly Chase.

To Chase Lock To SMPTE (Equal Mode):
- Put the sequencer in External Sync
- Set the SMPTE Start Time
- Click PLAY or PAUSE (or press the Space Bar or TAB keys)

- If SMPTE code is being fed to the SMPTE Box, the display will give you a real-time readout of the location of the code and your music will automatically sync up and begin playing
- If you stop the tape, roll it back, and start it up again, you'll see that within a second or so, the sequencer locks right up, in perfect sync

The second Chase Mode is for a specific use. When you have SmpteTrack driving a drum machine that can't chase to Song Position Pointer, there may be times when you want to send a MIDI Start or non-MIDI clock to the drum machine so it can start at the same time the sequence Locks to SMPTE. This can only happen if you Lock to SMPTE at the SMPTE Start Time, rather than Chasing to anywhere on the tape. If this is the case, then you should use the second Chase Mode.

To Change To Unequal Mode:
- Both Click or Shift Click on the Equal Sign (between PLAY and PAUSE)
- It becomes a < sign

SmpteTrack now Locks to SMPTE in a different manner.

When you click on PLAY, the sequence will not start until it reads the SMPTE Start Time. When it reads this time, it will Lock to the very beginning and send a MIDI Start or non-MIDI clock to any drum machines listening.

This is the only situation in which SmpteTrack can lock to SMPTE and start a drum machine that doesn't recognize Song Position Pointer.

If you want to Chase to a point past the SMPTE Start Time, click the PAUSE button so that the PLAY button is activated. Or you can return to Equal Chase mode by Both Clicking or Shift Clicking on the < between the PLAY and PAUSE buttons. An equal sign will reappear.

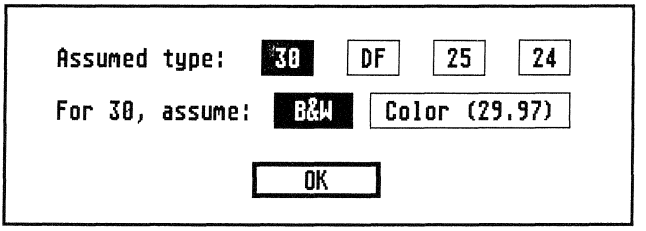
Setting the SMPTE Start Time

You can offset your sequence to start at any SMPTE time you want. It defaults to start at 01:00:00:00.00. That translates to one hour, zero minutes, zero seconds, zero frames, and zero bits. SMPTE time code is always read in the "hour/minute/second/frame/bits" format. Note that in SMPTE time code there are 80 bits per frame.

To Change The SMPTE Start Time:
- Click on the digit you wish to change in the SMPTE Start Box in the Control Display.
- Left click to decrement the digit, right click to increment the digit.

SmpteTrack automatically detects the incoming SMPTE frame rate. However, you can also set the frame rate manually.

To Set The SMPTE Type:
- Select SMPTE Type from the Box menu
- A dialog box appears:



- The first question asks: what Sync format do you want to use?
- Click on one of the formats (30, Drop Frame, 25, 24)
- After you Lock to SMPTE, if the format you read is different from the type you selected, the Assumed Type will change to that format

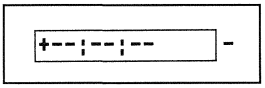
- The next question asks: If using 30, should SmpteTrack assume black-and-white (true 30, by far the most common method) or color (actually 29.97, but non-drop)?
- Click on Color (29.97) *only* if you know the non-drop "30" was written (possibly by a video production house) at 29.97
  Leave at B&W in all other cases (including if you striped the tape using SMPTEmate)

- Click OK

Put SmpteTrack back in **Chase** mode by clicking Pause (or TAB), and as soon as the SMPTE time you selected arrives, your music will begin playing.

To Use The SMPTE Display On The Control Screen:

- Click in the SMPTE Time Display box to toggle between actual and offset SMPTE
- When a + symbol appears, that indicates offset SMPTE (time since the SMPTE Start Time)
- No + means the actual SMPTE Time Code from the tape is shown
- The following symbols may appear to the right of the Time Display:
  When no SMPTE is detected, – is displayed



When SmpteTrack locks to SMPTE, no symbol is displayed
When ready to lock but before the SMPTE Start Time, < is displayed
When not locked and past the SMPTE Start Time, > is displayed

The onscreen SMPTE Sync Time readout shows occasional frames while chasing, and while it only shows seconds while locked, it shows the last even frame whenever you Stop or lose sync.

Note:
You can load the SMPTE Sync Time you see on the screen into the SMPTE Start Time (shown below it on the screen) by clicking on the down-arrow that points from the Sync Time to the Start Time.

Tweaking The SMPTE Start Time In Real Time

You can click on the rightmost 3 digits (single frames, tens of bits, and single bits) while it's playing and "tweak" the SMPTE Start Time in real time. (To click on any other digit, you must first STOP the sequencer.) You can also load the Start Time from the current Sync Time (displayed directly above) "on the fly" by clicking the down-arrow pointing from the Sync Time to the Start Time.

Sometimes this "tweaking" can cause the metronome to click. This is a harmless side effect and can be ignored.

Register SMPTE Start Time

You'll notice the SMPTE Start Time has an "@" sign in front of it. This is to signify Global SMPTE Start mode, in which there is one SMPTE Start Time that corresponds to the start (00000.00) of the song. But by clicking on the "@" sign you can change it to the "=" sign, which signifies Register SMPTE Start mode.

In Register SMPTE mode, the SMPTE Start Time:
- Is remembered separately for each Register
- Corresponds to the Start Time (Locate Time) of that Register, which can be anywhere in the song!

In Register SMPTE mode, real-time tweaking of the SMPTE Start Time is not available after you change Registers, until you STOP.

Some people working with film cues find it inconvenient to have Register SMPTE always "chase backwards" before the Start Time. The Unequal Mode (which disables chasing; see "Chasing SMPTE" above) can work in conjunction with Register SMPTE Start mode.

To have SMPTE trigger only at the Register SMPTE Start Time, not chase before it:
- Set Unequal (<) mode
- Enable Auto-Locate
- Click PLAY (or press Space Bar)
- Start the tape
- If you stop and restart the tape, or PAUSE/unPAUSE, you'll make it chase; click PLAY every time to avoid chasing before the Register SMPTE Start Time

Application Note:
With Register SMPTE, you have a powerful mechanism for equating a SMPTE time on the tape with a beat of the music:

- First make sure you're in Register SMPTE Start mode.
- Put the sequencer in Chase mode (it doesn't matter that it'll chase to the wrong spot) and run the tape.
- When you see/hear the spot on the tape you want to "mark", click on the down-arrow to load the current Sync Time into the SMPTE Start Time.
- Now go into Internal Sync and play the music in the sequencer.
- When you get to the spot in the sequence which you want to correspond to that spot on the tape, click on the left-arrow to the right of the Register's Start Time.
- Now go back into External Sync and chase to the tape, and the sequence should match very closely with the tape.
- You can use the real-time SMPTE Start Time adjustment to "tweak" it to perfection.

Notes For SMPTE

- *All of the Silent Re-Cueing applies to SMPTE Chase. See chapter 4 for details on this topic.*

- *Most songs or music cues will have a countoff of some beats. Make sure you account for this when setting the SMPTE Start Time. Set it when beat 0 falls, not to where the music starts (if that is later).*

- *When using SMPTE sync, there is no need to stop the sequencer and rechase every time you stop tape. You can mute/unmute tracks, change tempo and do many functions that do not re-cue SmpteTrack. It will disable Chase after functions that cause the sequence to re-cue.*

- *When recording in SmpteTrack while in SMPTE Sync, keep in mind that every time the sequencer chases to SMPTE, it re-cues, clearing out the Record Buffer. If you stop and restart the tape while syncing to SMPTE, you will lose any information in the KEEP buffer unless you KEEP it first.*

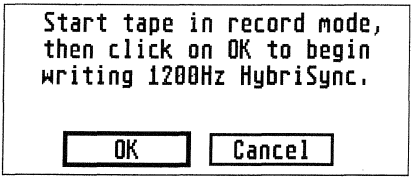
HybriSync

A type of sync developed specifically for SyncTrack users, it is simply a 1200 Hz square wave. From it, SmpteTrack can derive the same type of 2400 Hz steady clock that it derives from SMPTE time code. Hence, it offers the ability to lay down a sync track first, and then later decide what tempo(s) will be used. However, it does not offer the chase abilities of SMPTE, nor does it have any error-correction capabilities to compensate for dropouts.

OUTPUT JACK:	TAPE OUT
INPUT JACK:	TAPE IN
APPLICATION:	TAPE DECKS

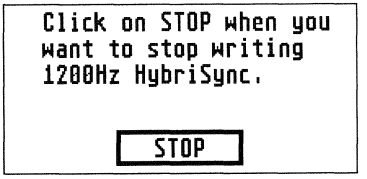
To Write HybriSync:

- Connect Tape Out of the SMPTEmate to an input of your tape deck
- Recording levels in the -10vu to -7vu range are likely to work best
- Select Write HybriSync from the Box menu
- A dialog box appears:



- Click OK to start HybriSync Output

- Another dialog box appears:



- Click STOP when you've finished writing HybriSync

Syncing To HybriSync:
- Select Ext Sync Type from the Box menu
- Choose HybriSync
- Put MidiTrack ST in External Sync
- Click on the ST Play Button to get ready to Sync
- Press PLAY on your tape deck

FSK

Frequency Shift Keying. A synchronization method where a signal shifts between two frequencies. Frequency shifts represent clocks related to tempo. SmpteTrack supports two types of FSK: Type O (Oberheim) which is 96 ppq, and Type R (Roland) which is 24 ppq.

OUTPUT JACK: TAPE OUT
INPUT JACK: TAPE IN
APPLICATION: TAPE DECKS

Note:
FSK Sync input is designed to work with a tape deck. It may not work properly if connected directly from a drum machine, due to too hot of a preset FSK output level.

To Write FSK:
- Select Output Sync from the Box menu
- Select either FSK sync type (O or R)
- Click OK
- Put the ST in Internal Sync Mode
- Put the tape deck in record
- Make sure the Countoff is set to **...0**
- Click on the ST Play Button to play the sequence
- It will automatically output FSK sync when the song starts
- The Sync Output will follow any tempo changes in the song
- There will be a delay of several seconds (to write a lead-in) after you click Play and before the counter starts

When Finished Writing FSK:
- Select Output Sync from the Box menu
- Choose **None**

Syncing To FSK:
- Select Ext Sync Type from the Box menu
- Choose the correct FSK sync type (O or R)
- Put MidiTrack ST in External Sync
- Click on the ST Play Button to get ready to Sync
- Press PLAY on your tape deck

Audio Click

An audio sync intended mostly as a metronome reference for human musicians, but also sometimes used for synchronizing a sequencer to a steady audio signal (such as a metronome tick or a steady 4/4 kick drum track) in emergency situations. By the very nature of being slow enough (once per quarter-note) to be used as a metronome, it is inherently the least accurate, by far, of any of the types of sync that SmpteTrack supports.

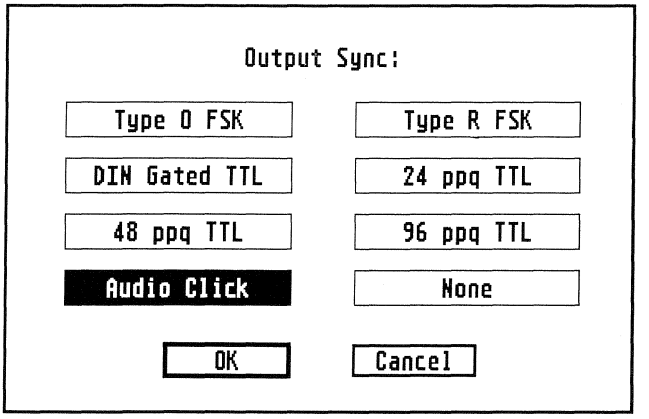
OUTPUT JACK:	TAPE OUT
INPUT JACK:	TAPE IN
APPLICATION:	TAPE DECKS, AUDIO SYNC REFERENCE

Note:
Click Sync input is designed to work with an audio click. It will not work with just a single pulse click. It is also optimized for moderate tape levels; too hot a signal may false-trigger it on noise.

To Write Audio Click:
- Select Output Sync from the Box menu
- Select sync type Audio Click
- Click OK
- Put the ST in Internal Sync Mode
- Put the tape deck in record
- Click on the Play Button to play the sequence
- It will automatically output a Click sync when the sequence starts
- The Sync Output will follow any tempo changes in the song
- There will be a delay of several seconds (to write a lead-in) after you click Play and before the counter starts. You can bypass this delay by clicking on Counter Reset and then Pause (instead of Play) to play the sequence.

When Finished Writing Audio Click:
- Select Output Sync from the Box menu
- Choose **None**

Syncing To Audio Click:
- Select Ext Sync Type from the Box menu
- Choose Audio Click
- Put MidiTrack ST in External Sync
- Click on the ST Play Button to get ready to Sync
- Press PLAY on your tape deck



TTL

A type of hardware sync which involves individual pulses between ground and five volts, used on many drum machines, usually at either 24, 48, or 96 ppq. In TTL sync, each 0-to-5-V transition represents one clock. (Originally an acronym for Transistor-Transistor Logic.)

OUTPUT JACK:	AUX OUT
INPUT JACK:	TAPE IN
APPLICATION:	NON-MIDI DRUM MACHINES, SPECIAL DEVICES

To Output TTL:
- Select Output Sync from the Box menu
- Select one of the TTL sync types (24, 48, or 96 ppq)
- Click OK
- Put the ST in Internal Sync Mode
- Click on the Play Button to play the sequence
- It will automatically output TTL sync when the song starts
- The Sync Output will follow any tempo changes in the song

To Cancel the Output:
- Select Output Sync from the Box menu again
- Choose **None**

Syncing To TTL:
- Select Ext Sync Type from the Box menu
- Choose one of the TTL sync types (24, 48, or 96 ppq)
- Put MidiTrack ST in External Sync
- Click on the ST Play Button to get ready to Sync
- Start your drum machine

DIN Gated TTL

A type of TTL sync (most commonly used by Roland) which involves two separate signals in each direction (thus a total of four if dealing with both directions) which are sent over a 5-pin DIN cable (which looks externally just like a MIDI cable, but may not be wired exactly the same way). One of the two signals is a 24 ppq TTL clock while the other is a start/stop ("gate") TTL signal which is in one state when running and in the other when stopped.

OUTPUT JACK:	BOTH TAPE OUT AND AUX OUT
INPUT JACK:	BOTH TAPE IN AND AUX IN
APPLICATION:	NON-MIDI DRUM MACHINES (ROLAND)

To Output DIN Gated TTL:
- Select Output Sync from the Box menu
- Select DIN Gated TTL sync type
- Click OK
- Put the ST in Internal Sync Mode
- Click on the Play Button to play the sequence
- It will automatically output TTL sync when the song starts
- The Sync Output will follow any tempo changes in the song

To Cancel the Output:
- Select Output Sync from the Box menu again
- Choose **None**

Syncing To DIN:
- Select Ext Sync Type from the Box menu
- Choose DIN Gated TTL sync type
- Put MidiTrack ST in External Sync
- Click on the ST Play Button to get ready to Sync
- Start your drum machine

MidiTrack II/III

A type of sync developed specifically for MidiTrack II and III on the Atari 8-bit computers. Recognized by SmpteTrack to provide users of those programs with "upward compatibility". It involves a steady square wave which is divided by a user-specified value (referred to as "edv" in MidiTrack II/III) to derive a 24 ppq clock.

OUTPUT JACK:	NO OUTPUT JACK AVAILABLE
INPUT JACK:	TAPE IN
APPLICATION:	PROJECTS STARTED ON MIDI-TRACK II/III

READ ONLY

This Sync Type assumes MidiTrack II/III Sync has already been written on tape from a previous project started with the Hybrid Arts software for the Atari 8-bit computer.

Syncing To MidiTrack II/III:

- Select Ext Sync Type from the Box menu
- Select sync type MidiTrack II/III
- Click OK
- Put MidiTrack ST in External Sync
- Click on the ST Play Button to get ready to Sync
- Press PLAY on your tape deck

APPENDIX A
APPLICATION NOTES

In This Appendix:

- Working With Video
- Sound Effects & SMPTE
- Transfer: Sequencer To Sequencer
- Transfer: Drum Machine Songs
- Thinning Out Controllers
- Disabling the Mouse
- About Sequencer Resolution
- Running Status Output

WORKING WITH VIDEO (SmpteTrack ONLY)

Having a sequencer that locks to a video or tape deck with a resolution of 2400 bits per second means you have precision synchronization and no drift. If you have a video project to work with, or are scoring a film, SmpteTrack is a great aid for composition.

Usually, a video requiring music is delivered with visible Time Code "burned" on the tape, and SMPTE on track 2 and/or the Address Track of your copy. This is not always the case, however, and you may have to stripe the video tape with time code yourself. If you prefer to work with the sound effects and narration audible, you'll need to have either a stereo VCR that will selectively record on one channel or the other, or a standard 3/4" deck (or you can stripe time code while copying from one VCR to another).

Connect the output of the track with code to the Tape In of MidiTrack ST, and put the sequencer in External Sync. From now on, use the VCR to control SmpteTrack.

You can use the metronome click to see if a particular tempo is working against a scene or not. Or, after selecting a tempo, run your cue, and mark hit points on a score as you see them go by. You'll always be accurate, because you're noting when they'll hit while you listen to the click. If the majority of them are on, but a few are a shade early or late, you can always build a variable tempo track, slowing down or speeding up slightly so the hits are all on the money. Build the tempo track up before you write the music, so you're sure that everything is synchronized to the hits you've selected. After you've written your score, mute the Tempo track so you're not having to deal with the tempo variances while recording the parts into SmpteTrack.

Because you can compose to the picture while you watch and hear back in perfect sync what you've just written, this allows for a lot more creativity. You're not forced to remain in sync with the picture while you write, though. Just select Internal Sync and take your time to get the music just right, recording as you go. When you've got a section you're happy with, pop back into SMPTE sync and run the video. You can take an exterior viewpoint, observing the effect the track has on the picture, not having to compose, play, watch, and critique all at the same time.

SOUND EFFECTS & SMPTE (SmpteTrack ONLY)

If you've ever been involved in post-production work, you know it is a sometimes-tedious chore to sync up sound effects with a picture. Using SmpteTrack and an external sampling device, you can streamline this routine easily.

Although SmpteTrack doesn't generate a cue or event list, you can still use it in a similar way. Go through the scene, noting the SMPTE times when effects will be needed. Sample the various effects you'll be needing into your sampling device, and assign the sounds to different keys. Keep a record of what sound is mapped where.

Set the tempo to 60; this will make it easy to convert the SMPTE times into beats (1 beat per second). Also, if you use Measures Mode with the time signature set at 60/4, you'll have an easy way of determining the minute, second, and frame at any time. The measure will display the minute (starting with 0001), the beat will show the second (offset by 1, ie., in a range of 01 to 60 as opposed to 00 to 59), and the tick can be translated into the frame number using the chart on the next page.

You have several alternatives for entering in the notes your sound effects will trigger:

- Play them in in real time so you have each note fairly close to the actual trigger point, then using the Graphic & Text editing screens, adjust each note to the exact SMPTE time. (see chapters 7 and 8)
- Work out the exact beat/tick each event should trigger and step edit them in.
- Using the Event List, insert each event, then adjust the times to the appropriate moments.
- Place each event on a separate track and use the Track Offset feature to adjust each one independently from the others.

When you've got eveything in the right place, run the video and see if it all looks right. Sometimes you'll want to adjust the sound a little bit early or late, to make it work right with the picture. Once you're satisfied everything is in order, roll the tape, sit back, and you're done.

Conversion Table (Between Ticks & Frames at 60 BPM and 60/4)

Frame Number	Ticks @ 30	Ticks @ 25	Ticks @ 24
00	.00	.00	.00
01	.03	.04	.04
02	.06	.08	.08
03	.10	.12	.12
04	.13	.15	.16
05	.16	.19	.20
06	.19	.23	.24
07	.22	.27	.28
08	.26	.31	.32
09	.29	.35	.36
10	.32	.38	.40
11	.35	.42	.44
12	.38	.46	.48
13	.42	.50	.52
14	.45	.54	.56
15	.48	.58	.60
16	.51	.61	.64
17	.54	.65	.68
18	.58	.69	.72
19	.61	.73	.76
20	.64	.77	.80
21	.67	.81	.88
22	.70	.84	.92
23	.74	.88	
24	.77	.92	
25	.80		
26	.83		
27	.86		
28	.90		
29	.93		

TRANSFER: SEQUENCER TO SEQUENCER

You may have songs on another computer's sequencer that you would want to transfer to MidiTrack ST. The problem is the Atari ST disk drive can't read the other computer's disks directly (because the file formats are different). You can, however, communicate using MIDI. To do this, you must sync both sequencers together.

Connections & Set Up:
- Set up both sequencers (turned ON, songs loaded)
- Connect ST MIDI In to other MIDI Out
- Connect ST MIDI Out to other MIDI In
- Assign each track of the other system to a different MIDI channel (it doesn't matter if they are the correct MIDI channels or not, just as long as each part has its own MIDI channel assigned)

There are two ways you can transfer: (1) use the ST as the Master and PULL the MIDI information across as it controls the other system; or (2) give master control to the other system and transfer to the ST set as a Slave.

Atari ST as MASTER:
- Set MidiTrack ST to Internal Sync
- Set the other to MIDI Sync
- Set the MidiTrack ST Tempo to a very slow tempo (this improves the clock resolution of the synchronization between MidiTrack ST and the other system)
- Select Output Options from the MIDI menu
- Set Start/Stop/Clock to Enabled
- Start the other system's sequencer
- Start MidiTrack ST
- If all is well, MidiTrack ST will be in sync and the KEEP button will highlight indicating MIDI data is being received
- Make sure the MIDI Data Error Indicator (to right of KEEP button) remains blank (see pg. A-10)
- When the sequence is complete, save the information to a track
- Play back the track on MidiTrack ST to verify the transfer
- Unmix the track so that each part is again on a separate track

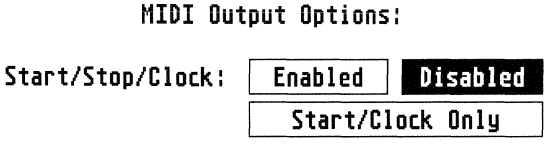
You can reverse this process as well, going from MidiTrack ST to another sequencer.

TRANSFER: DRUM MACHINE SONGS

Drum patterns or complete songs can be transferred to MidiTrack ST. Using the editing functions, you can then convert this track so that it will play the correct instruments on another drum machine that has a different layout.

To Transfer Drum Machine Sequences:

- Select Output Options from the MIDI menu
- Set Start/Stop/Clock to **Enabled**
- Connect the Drum MIDI Out to the ST MIDI In
- Connect the Drum MIDI In to the ST MIDI Out
- Set the Drum to MIDI Sync
- Set the ST to Internal Sync
- Set the tempo of the ST to a very slow rate (this improves the clock resolution of the synchronization)
- Start MidiTrack ST
- If all is well, the drum machine will start (playing at the tempo set on MidiTrack ST), MIDI information will be sent to MidiTrack ST from the drum machine, and the KEEP button will highlight indicating MIDI data is being received
- Make sure the MIDI Data Error Indicator (to right of KEEP button) remains blank (see pg. A-10)
- When done, store the information on a track
- Set the Drum to Internal Sync
- Select Output Options from the MIDI menu
- Set Start/Stop/Clock to **Disabled** so that the drum sequence doesn't start when you play the ST sequence



- Play back the track on MidiTrack ST to verify the transfer

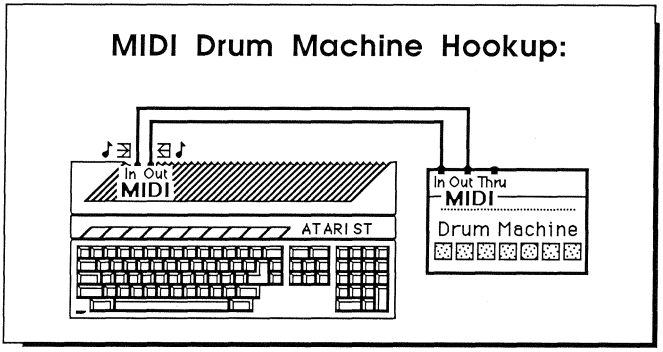
To Unmix Each Drum Part To A Different Track:

- Use KeySplit Track from the Edit Menu (see Chapter 4)
- Check your drum machine's manual to find out which instruments are assigned to which notes (eg. F1 = KICK, G1 = SNARE, etc.)

If you have another drum machine you want to use to play the parts, find out what the MIDI notes are for each of the new drum machines instruments and transpose each part to the new note value. Now you can play the new drum machine from MidiTrack ST.

This procedure allows you to program on one drum machine, and play back on another.

The drum tracks on MidiTrack ST are linear. They can be edited just like any other track (Mixed together, used in Sections and Chains, Quantized, etc.)



THINNING OUT CONTROLLERS

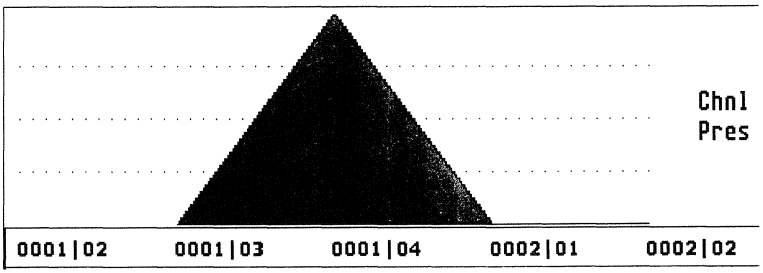
There are times that so much data is crossing the MIDI cable at once, the sequence is affected in some way (for example, missing beats, slowing down). The first thing you think of doing is Filtering out data you don't really need to record. The problem is you do want to record Controllers, but just not as often as the Controller Events are being sent.

There are two ways to "thin out" the amount of controller data recorded on a track, without substantially changing the performance characteristics. One is to use Optimize Every (see Chapter 5). The other involves the Graphic Screen.

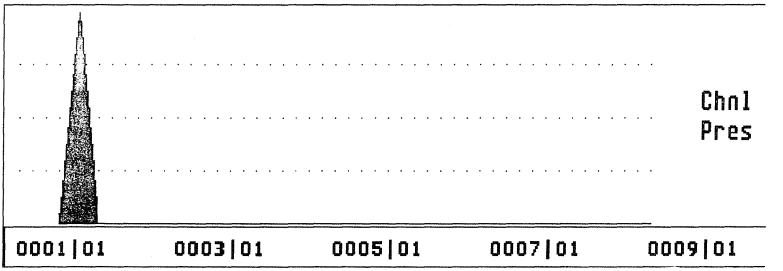
When drawing curves on the Graphics Screen, MidiTrack ST has to use pixels to translate a graphically drawn curve into a MIDI controller events. The value placed on these pixels has to vary depending on the drawing resolution.

Example Showing Drawing Resolution:

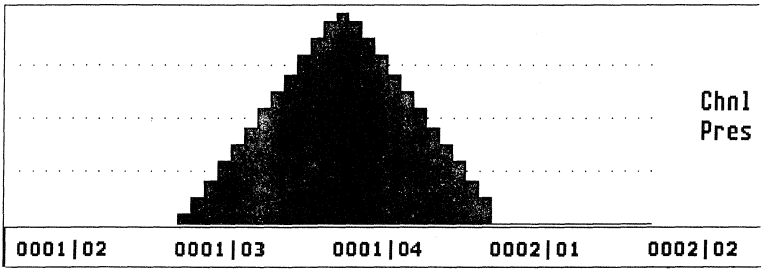
- First we Zoomed In as far as possible
- A Channel Pressure curve was drawn in Rubberband Mode (Every "stair-step" you see is an actual event)



- Then we Step-Zoomed Out 3 times
- You now see the curve compressed, and fewer "stair-steps"displayed (Due to display resolution, each step now represents more than one event)
- We then redrew the same shape at this new resolution trying to match the original curve as displayed



- We Step-Zoomed In 3 times (returned to the original resolution)
- Notice at this point that the curve has fewer and bigger "stair-steps"



If you follow this example and redraw Continuous Event curves Zoomed Out (not necessarily all the way), this will reduce the number of events.

If you have too coarse of a step, you may be able to hear the event step. Your goal is to find the happy medium between just enough curve and not too many events that would clog MIDI.

DISABLING THE MOUSE

Most of the time it can be very handy to have the mouse available for pointing and clicking. However, in a few circumstances, the processing time the computer spends displaying the mouse can get in the way of MIDI processing. Thus MidiTrack ST allows you to disable the mouse.

There are two situations in which you may want to disable the mouse:

1. You are recording (or transferring a sequence into MidiTrack ST from a drum machine or a sequencer on another computer), and you notice the MIDI Data Error Indicator appear (a digit, or plus sign, to the right of the KEEP button). This means that there is a lot of data on the MIDI input (at least at certain moments during the recording), and occasionally, the computer is overloaded and does not receive the data correctly. (The digit is the count of errors since the last re-cue; "+" means more than 10 errors. The MIDI Data Error Indicator will be blanked out when you re-cue.)

   This is usually caused by movement of the mouse while recording. Perhaps you are consciously moving the mouse; or perhaps it's simply vibrating during recording (from the loud music you're playing?!?). Either way, disabling the mouse should solve the problem.

2. If you feel you need the very last ounce of playback timing accuracy (and MidiTrack ST was written with those users in mind!), you may want to disable the mouse when doing critical playback (such as your final mix). Most of the time this shouldn't be necessary, but the feature is there if you want it.

To Disable The Mouse:
- Press Control Numeric 0
- The mouse will disappear; moving or clicking it will have no effect on the main screen
- The following message will appear in place of the menu bar:

- All key commands are still active (see Appendix K)
- If you use a key command that puts up a dialog box or another screen, the mouse will be temporarily re-enabled; it will be disabled again when you return to the main screen

To Re-Enable The Mouse:
- Press Control Numeric 0 again
- The mouse will reappear
- The menu bar will reappear

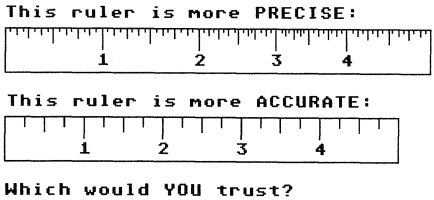
ABOUT SEQUENCER RESOLUTION

There is a common misunderstanding about several factors dealing with sequencer resolution. MidiTrack ST works nominally at 96 ticks per quarter note (although there are ways to effectively change that, as you will see shortly). Some other sequencers have used resolutions much larger than that, and the intuitive feeling might be that more is always better. But in the real world, design parameters for any product have to balanced to get the best performance. You can't put a rocket engine (though it sure can go fast!) into a subcompact car and expect to get better acceleration; assuming you could fit the engine into the car, all you would get is a car that would break apart very quickly due to the stresses!

The real-world factors at play here are the finite MIDI bandwidth (3125 bytes a second) and the Atari ST's finite processing speed (though equal to or even faster than most other computers used for MIDI, it is not quite on par with the world's most powerful mainframe computers).

The result that musicians are most often concerned with is having the music that comes out sound like the music that goes in. As with audio equipment, lab testing may miss some important distortions which your ear may pick up, and the ear might ignore some distortions that an oscilloscope shows clearly.

One of the concepts we feel is most important is the difference between PRECISION (resolution) and ACCURACY. Imagine a tape measure used for measuring if your furniture will fit in tight spots. PRECISION has to do with HOW CLOSE TOGETHER the marks on the tape measure are. ACCURACY has to do with whether each of those marks is EXACTLY WHERE THEY SHOULD BE. If you have a tape measure that has a mark every 1/16 of an inch, you may feel that's more useful than one that has a mark only every 1/4 inch. But what if the tape with closer markings has stretched in some places, while the tape with markings a bit further apart is perfectly calibrated? Now is it still obvious that the tape measure with more markings is "better"?



The design of MidiTrack ST has been focused on having the most accurate PREDICTABILITY and REPEATABILITY of timing, and we found that this was easier to achieve by staying with a modest precision. The higher the precision (resolution) at a given tempo, the more times a second the computer has to do tick processing. The more time it's spending doing this busy work, the less time it has for other things (like processing your MIDI events). Thus IF YOU DON'T NEED higher resolution, having the program pursue higher resolution may be an inappropriate use of resources.

This brings us to the next point, which is not only when DO you need higher resolution, but when is higher resolution actually effective?

Resolution interrelates with tempo, in that a certain number of ticks per beat is a fewer number of ticks per second at slower tempos. So the first valid conclusion is that higher resolutions may be beneficial at slow tempos. But at average tempos, there are situations where in simple tests higher resolutions may seem beneficial, but where in reality they have little predictable effect.

Let's assume you're working at 96 ticks per quarter-note (1/384th notes), at 120 bpm. This means there are about 5 milliseconds per tick. For simplicity, let's assume Running Status is not being used (it may slightly increase how many MIDI events you can send in that time). Each Note event (On or Off) is 3 bytes and takes 1 millisecond. So at this tempo and resolution, you can only send 5 Note (or Control Change, for that matter) events in one tick. If you try to send more, the sixth one will be sent effectively on the next tick! What would be the situation at 480 ticks (1/1920th notes) at the same tempo? Each tick would be 1 millisecond, and you could only send one event per tick! Trying to send a 5-note chord on one tick? You aren't doing it! It's being spread effectively over the 5 ticks that correspond to the 1 tick at a resolution of 96. So very high resolutions are less effective the more MIDI activity you have, which is exactly when you are MORE concerned with having the sequencer maintain ACCURACY.

Another argument we hear is that people want higher resolutions for more Track Offset (shifting in time) control. This can definitely be valid (and thus the application we're leading up to), but again some analyses can be misleading. Let's say that on track 1 you have a single snare Note On, while on track 2 you have a 5-note chord coming On on the same tick (it's all on the same tick because you Quantized). You decide you want to have the snare play a tiny bit late, so you Offset the snare track to play 1 tick later. Does it make any difference whether the sequencer was using 96-tick or higher resolution? No — moving the snare to the next tick makes it get sent AFTER the 5-note chord, which is going to take 5 milliseconds no matter what (1 tick at 96 ticks resolution, 5 ticks at 480). You'll hear the same effect with either resolution!

While major increases in resolution may be of infrequent benefit, we do feel there are some valid situations for working at least at 192 ticks (especially at slower tempos, and with sparser arrangements). Therefore in the next version of the program, we will have a complete mechanism for choosing between 96- and 192-tick operation. But in the meantime, you should be aware that you can get the equivalent of 192-tick operation simply by working at DOUBLE TEMPO! 192 ticks at 60 bpm is the same number of ticks per second as 96 ticks at 120 bpm. While your Counter readings will reflect the doubled tempo rather than the tempo your music is really at, the MUSICAL EFFECT of an effective 192-tick resolution will be correct. (And if you send in your warranty/registration card, you'll be eligible for the next Upgrade to MidiTrack ST in which 192-tick resolution will be an integrated option, rather than a "workaround" as at present.)

If you have a piece of music that you've started at 96-tick resolution (normal tempo reading) and you now want to work at double tempo, you'll have to stretch all the tracks by a factor of 2. To do this, use the Alter Timespan function with a ratio of 002/001 on each track. You'll need to adjust (double) any Register or Section Times to match. And remember to interpret note values correctly at double tempo (when setting Quantize amounts, for example).

RUNNING STATUS OUTPUT

Running Status is active on all Channel Message events* sent out. What this means is that, in some circumstances, you may be able to get a bit more actual MIDI throughput than before. This is more likely with fewer channels per port (for example, with the MidiPlexer), or with quantized polyphonic tracks.

Running Status is a rule in MIDI which says that if the Status Byte (first byte on the left of any message displayed on the Event List) of a new event sent out is the same as the Status Byte of the last event that got sent out, the new Status Byte does not need to be sent. If there are any non-Note-On events (remember, some keyboards' Note Off events are really Note On events with zero velocity, so Running Status will work with a combination of Note On's and "pseudo" Note Off's there) such as control changes interspersed between the Notes, the Status Bytes are alternating between Note On (9n) and Control Change (Bn) and Running Status doesn't come into play. Similarly, events on alternating MIDI channels cannot make use of Running Status.

Running Status is "broken" whenever you Stop, Pause/Continue, or change the Thru on/off, channel, or output port, on any cueing operations, and for every event that is Thru'd.

Note:
If you change the MIDI channel setting on an instrument, it may continue to respond on the old MIDI channel while Running Status continues, as long as the only events you send are Note events. If you bring the instrument "on line" (turn it on or hook it up), it won't play anything until it receives a Status Byte. "Breaking" Running Status (forcing the Status Byte to be re-sent) can be done by the above actions, or by causing some other event (such as a pitch bend or control change) to be sent.

*Patch change messages are not sent using Running Status, since some MIDI devices that only receive Patch Changes do not handle Running Status correctly.

APPENDIX C
CONVERTING MIDI FILES

In This Appendix:

- Information needed to properly transfer from one sequencer file format to another.

  This feature is included in the Hybrid Arts software but is only needed if you are transferring between MidiTrack ST song files and some other company's sequencer file.

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WHAT ARE MIDI FILES?

MIDI itself, as sent along MIDI cables, is a standard that has been agreed to by many manfucturers. You can interconnect most keyboards and other instruments using MIDI and they will "talk" to each other, "understanding" the same language.

But when a sequencer records MIDI information on a computer, there are many things it needs to keep track of in addition to the MIDI events, such as ***when*** the events should be played back, how they are organized into tracks, what the tempo of the song is, which tracks you want muted or protected, etc. Different sequencers need to store different amounts and kinds of information, and so each sequencer uses a different file format. You can not, in general, take a file created with one brand of sequencer and read it into another brand of sequencer, even if both sequencers use the same kinds of data disks, because each sequencer expects the information in the file to be organized differently.

So it used to be that, if you wanted to transfer a song between two different sequencers, the only way you could do it was to run each sequencer on a separate computer, connect the two computers with MIDI cables, and simply ***play*** the song in one sequencer while ***recording*** it in real time on the other sequencer. Even if you have the two computers handy, this can be a time-consuming procedure. And most people don't have multiple computers just sitting around waiting to be used for such sequencer-to-sequencer transfers!

Now, however, with the arrival of MIDI Files, transferring songs between many sequencers is much simpler. You simply save the song to disk as a MIDI File in one sequencer, and load the song in MIDI File format into the other sequencer!

"MIDI Files" is the official name for the sequencer file standard, which was first developed by Dave Oppenheim of Opcode Systems on the Macintosh, and has now been approved by the MIDI Manufacturers' Assocation (MMA), the organization that maintains the MIDI Spec. Most sequencer developers have added (or are in the process of adding) MIDI File support for their programs, either through capabilities built into the program or through separate conversion utilities.

Hybrid Arts has done both: the MidiTrack ST Series programs (SmpteTrack II and EditTrack II) have MIDI File conversion built-in; there is also a free separate conversion program called MidiMover, for users of the other Hybrid Arts programs that use **.SNG** files, such as EZ-Track Plus, EZ-Score Plus, and Ludwig.

An important point needs to be made here: MIDI Files are intended as a sequencer ***interchange*** format only. That is, they are specifically designed for the purpose of moving information from one sequencer to another. Thus they deal only with the most common type of information that is likely to be used by most sequencers, such as MIDI data, tempos, etc. They do not deal with types of information which tend to be specific to the design of a particular sequencer, such as the way tracks are numbered, mute settings, loops, synchronization type, etc.

It is not intended that MIDI Files be used as the *native* method of storage in a particular program, except perhaps some programs whose main function is to create data for use by other programs rather than for later use by that same program. (In fact, many sequencers use the terms Import and Export to refer to saving and loading MIDI Files. Hybrid Arts simply calls it Saving and Loading MIDI Files, as opposed to Song Files, since Hybrid's sequencers use the term Import for another meaning -- Importing a single Track from another Song File.)

MIDI FILE FORMATS

MIDI Files come in three possible formats: format 0, 1, or 2.

Format 0 is one single track representing the whole song. This is the most common-denominator form of interchange. It is analogous to interconnecting two computers by MIDI cables and playing the whole song from one sequencer into the other and saving it as one track. Assuming the receiving sequencer has unmix-by-channel capabilities, that track can, of course, be later split into multiple tracks.

Format 0	Single Track

Format 1 is multiple tracks intended to play at the same time. This format most closely matches linear (not pattern-oriented) multi-track sequencers. In the interconnected-computers analogy, this is like playing each track soloed in the sending sequencer and recording it as a separate track in the receiving sequencer.

Format 1	Track 1 Track 2 Track 3, etc.

Format 2 is single-track patterns intended to play one after the other. This format is intended for pattern-oriented sequencers.

Format 2	Track 1	Track 2	Track 3 etc.

Almost all programs that support MIDI Files support at least format 0. Many multi-track sequencers (even some pattern-oriented sequencers that have multiple tracks in each pattern) also support format 1. Few if any sequencers to date support format 2.

MidiTrack ST and MidiMover support both format 0 and format 1.

WHAT IS INCLUDED IN A MIDI FILE?

A format 0 file contains all the information in one track. A format 1 file contains all tempo/meter information (plus SMPTE start time, if applicable) in the first track, and all MIDI information in one or more tracks that follow.

At the beginning of a MIDI File is a number called *division* which indicates how many *ticks per quarter note* are used when representing the time at which each MIDI event is sent. Hybrid Arts sequencers use 96 ticks per quarter note, and MidiTrack ST and MidiMover write MIDI Files with that division value. As long as you send MIDI Files between sequencers that have the same division value (in this case, between sequencers using 96 ticks per quarter note), you will not lose any resolution in the transfer. If you send a MIDI File between sequencers that have different division values, then only the resolution of the lower-resolution sequencer will be maintained.

For example, if you send data from a 24-tick sequencer into MidiTrack ST, you can only end up with events at ticks such as .00, .04, .08, etc. If you send data from MidiTrack ST into a 24-tick sequencer, you will effectively be quantizing the whole track slightly, as the events will be placed on ticks which correspond to .00, .04, .08, etc. (If the divisions of the two sequencers are not divisible by each other, such as going between a 96-tick and a 120-tick sequencer, some additional one-tick errors may occur in a back-and-forth conversion. This will not be cumulative, however, if you write and read the MIDI File several times.)

In the first (tempo/meter) track of a format 1 MIDI File (or in the only track of a format 0 file), MidiTrack ST and MidiMover can write and read the following types of information:

- Song Name
- Tempo Changes
- Meter Changes (and Metronome Tick "time signature" denominator)
- SMPTE Start Time

A format 0 MIDI File will also contain MIDI Events in its only track. In any additional (MIDI) tracks of a format 1 MIDI File, MidiTrack ST and MidiMover will write and read:

- Track Name
- MIDI Events
- Output Port (for MidiPlexer users)

Note that in a format 0 file the name of the single track is not saved, and in a format 1 file the name of a tempo and/or meter track can not be saved.

MidiTrack ST and MidiMover will deal with differences in song/track name length and in tempo values as well as possible. If a sequencer sends a song name longer than 32 characters, only the first 32 characters will be kept. Similarly, only the first 16 characters of a track name can be used. The closest possible tempo value (in Ultra-Fine Tempo Resolution, if necessary) will be used when reading tempo values from a MIDI File.

SmpteTrack will save the Global SMPTE Start Time in a MIDI File and read it back. MIDI Files assume frames are broken into 100 subframes, whereas in reality (and in SmpteTrack) frames are divided into 80 bits. Because of this discrepancy, a SMPTE Start Time written to a MIDI File and then read back may be off by one bit. (This will not be cumulative, however, if you write and read the MIDI File several times.)

MIDI Files do not support a metronome-tick time signature numerator; they assume the metronome tick is only accented at the start of a new measure. When reading a MIDI File, MidiTrack ST will set the metronome-tick numerator to 60 to make the metronome act this way.

SAVING MIDI FILES

You must first decide whether you want to write a format 0 or format 1 file. Use format 1 if you are sending the MIDI File to a multi-track sequencer and want to keep each track separate **and you know the program that will read the MIDI File can handle format 1**. Use format 0 if you are sending the MIDI File to a program that cannot handle format 1, or if you only have one MIDI track to send anyway. (A few multi-track sequencers can only handle format 0.)

Make sure you have no Chains active. If "loop" symbols appear on any track, indicating it is under Chain control, you will not be able to save a MIDI File. You should Flatten any Chains into linear tracks and mute the Chains (the tracks they control will be muted automatically). MidiTrack ST and MidiMover only save unmuted (turned ON) tracks in a MIDI File. NO MUTED TRACKS ARE SAVED. A format 0 file is saved if there is only one unmuted track. A format 1 file is saved if there are multiple unmuted tracks.

To Prepare To Save A Format 0 MIDI File:
- Select Mix Tracks from the Edit menu
- Use the Left button to select all the MIDI tracks you want to save in the MIDI File
- Use the Right button to save the mix of all those tracks to an empty track
- Turn OFF (mute) all the tracks you Mixed
- Turn ON (unmute) the new track which is a Mix of the other tracks
- Turn ON (unmute) the tempo and meter track, if any

To Prepare To Save A Format 1 MIDI File:
- Turn ON (unmute) all the MIDI tracks (2 or more) you want to save
- Turn ON (unmute) the tempo and meter track, if any

To Save A MIDI File:

- Select Save SNG/MID File from the File menu *with the right button* (or press Clr/Home and then press Alternate S)
- A file selector will appear, showing only files with the extension **.MID** (most programs use the **.MID** extension for MIDI Files)
- Type in a name for the file you want to save. This file name can be up to 8 characters; the **.MID** extension will be automatically added to the file name.

DON'T TYPE ANYTHING AS AN EXTENSION (3 CHARACTERS AFTER THE PERIOD) UNLESS YOU FULLY UNDERSTAND HOW TO USE THE ITEM SELECTOR BOX.

- Make sure to pick a file name that isn't used yet, unless you want to replace (without backup) an existing file. MidiTrack ST and MidiMover will not automatically back up a **.MID** file when you try to save to a file that already exists; the file will be replaced without any warning message.
- When you're ready to save, click OK or press Return
- A message will appear, indicating whether a format 0 or format 1 file is being written
- The message will stay on the screen until the file has been saved (this may take a minute or more for very large files -- it's not just saving, it's doing a lot of conversion calculations)

The MIDI tracks are saved in the order they appear on the screen. All tracks are saved with the Track MIDI Channel and Track Offset (Track Delay) incorporated into the track, as if a Mix had been done of the track to itself. If you have a track with events on different channels and you want to preserve those different channels on different events, make sure you don't have a Track MIDI Channel set for that track before you save it to a MIDI File; otherwise all events on the track will be on the Track MIDI Channel after it's been saved.

If you get a Memory Limit Exceeded warning, it means there wasn't enough memory to convert one or more tracks. The MIDI File will be saved, but some track(s) may not contain all the intended data. It is suggested you Delete the File you just saved. Less memory will be needed to save a format 1 file than a format 0 file (because it only needs to convert one track at a time rather than the whole song at once).

LOADING MIDI FILES

You don't need to know whether a file is format 0 or format 1 in order to load it. In fact, you don't need to know what computer the file was sent from (if you got the file by modem) to load it. MidiTrack ST and MidiMover will automatically skip computer-specific headers (see Transferring Between Different Computers below) and will automatically expand a MIDI file into:

- one tempo track, if there are any tempo changes in the song
- one meter track, if there are any meter changes in the song
- one or more MIDI tracks, in the order they were saved in the MIDI File

To Load A MIDI File:

- Select Load SNG/MID File from the File menu *with the Right button* (or press Clr/Home and then press Alternate L)
- A dialog box will appear, warning you that when you load in a MIDI File, you will be erasing the song now in memory
- Click OK to continue
- A file selector will appear, showing only files with the extension **.MID** (most programs use the **.MID** extension for MIDI Files)
- Click on the name of the MIDI File you wish to load
- Click OK
- A message will appear, indicating whether a format 0 or format 1 file is being read
- The message will stay on the screen until the file has been loaded (this may take a minute or more for very large files)

All tracks not converted will be empty. All Track MIDI Channels and Track Offsets (Track Delays) will be reset to their default values (dot and +0 respectively). The Song Name and the Track Names of *MIDI* (not Tempo or Meter) tracks will be filled in, if possible. If the MIDI file had a time signature, it will be used; otherwise the song will be in Beats Mode. If you're using SmpteTrack, the SMPTE Start Time will be filled in if present in the MIDI File. All other settings will be obtained from your **AUTOLOAD.SNG** (if you are using one - the program effectively does a New Song operation just before reading the MIDI File) or will be set to factory default values (if you aren't using an **AUTOLOAD.SNG**).

If you get a Memory Limit Exceeded warning, it means there wasn't enough memory to convert one or more tracks. The program needs to load each track from the MIDI File into memory as it's converting it. Less memory will be needed to load a format 1 file than a format 0 file of the same size (because it only needs to convert one track at a time rather than the whole song at once).

If you try to load a file with is not a valid MIDI File, or is damaged, you way get a warning which says "Not a MIDI File." (Be aware that some older versions of a few Macintosh programs wrote MIDI Files that don't conform to the current 1.0 spec.) You will also get a warning if you:

(1) try to load a format 2 file
(2) try to load a format 1 file with more than 58 tracks (60 tracks minus a possible tempo track and a possible meter track)
(3) try to load a time-based file (such as a cue list) rather than a tempo-based song

TRANSFERRING BETWEEN DIFFERENT COMPUTERS

If you are transferring between different programs on the Atari ST, you can simply take the disk containing the MIDI File written by one program and load the MIDI File from the same disk into the other program. (You can also transfer by modem, of course, just as you would any other ST file.)

If you are transferring between an IBM/clone and the Atari ST, you _may_ be able to transfer by disk, if you have a 3.5" drive on the IBM (or a 5.25" drive on the ST), and you ***format the disk on the IBM*** (or using a special formatting program on the ST; most ST formatting routines, including the one built into the Desktop and the ones built into Hybrid Arts programs, will not format disks that an IBM/clone computer can read directly).

In most cases, however, the easiest way to transfer MIDI Files between different computers is by modem (if the two computers are next to each other, and you know how to use a null-modem cable to interconnect them, you can transfer that way as well). If the other computer is ***anything but a Macintosh***, the process is very simple; just transfer the MIDI File as you would any other data file, naming the file with a **.MID** extension at the other end.

Files on most personal computers used for MIDI are stored in the same manner: a file simply contains the data it contains, and has a name! But on the Macintosh, files are stored in a more complex manner. Each file, in addition to having a name, has a type, an owner, and a resource fork, in addition to the data, which it stores in a part of the file called the data fork.

When Macintosh modem programs send files, they have an option called MacBinary. This puts a 128-byte header on the file that is **not** part of the MIDI File data. Most programs on computers other than the Macintosh will not recognize a MIDI File sent in MacBinary.

If you are sending a MIDI File from a Macintosh to the ST, and will be converting the file using MidiTrack ST or MidiMover, you have nothing to worry about, however! MidiTrack ST and MidiMover automatically detect and skip this 128-byte header on MacBinary-sent files, and find and convert the MIDI File data with no problem!

(In fact, MidiMover could be used to convert MIDI Files in MacBinary form to MIDI Files in ST-compatible form for use with other programs which can't handle MacBinary files directly!)

Going the other way is a bit trickier. MIDI Files created on the ST can be sent to the Mac by modem, but they will generally be interpreted as being "Text" type files, and unreadable by any Macintosh MIDI program! So, once the file is on the Macintosh, you have to change the file type to "Midi" (note that the "M" must be upper case but the "idi" must be lower case).

You can use a program such as ResEdit to do this (after selecting the file, use Get Info from the File menu to change the file type to "Midi", then save the file).

USES FOR MIDIMOVER

There are several things you can do with MidiMover.

The most obvious is to convert Song Files to/from MIDI Files if you're using EZ-Track Plus (which doesn't have the conversion built in).

You can also Auto-Score files which originate on other sequencers in EZ-Score Plus, by saving the files as MIDI Files in the other sequencer, using MidiMover to convert the MIDI File to Hybrid **.SNG** format, and then Auto-Scoring the **.SNG** file in EZ-Score Plus. Format 1 is suggested for this application, to make it easier to put different parts on different staves/voices.

You can also take sequences created in (by?) Ludwig and, by using MidiMover to convert them to MIDI Files, give them to anyone using any MIDI-File-capable sequencer on any computer.

You can take files which originate with other programs that aren't sequencers but which generate some sort of MIDI data (like Ludwig does) and save them as MIDI Files, and use them with any Hybrid Arts program (sequencer or scoring program) that can handle **.SNG** files.

And you can even use MidiMover to convert between format 0 and format 1 files, or from MacBinary to ST-format files, if another MIDI program you use can't handle the type of MIDI file you're trying to load! Just load the MIDI File and save it back out, using the instructions above.

Of course, if you have EditTrack or SmpteTrack, with MIDI File conversion built in, you can do all of these things too. MidiMover simply makes the same capabilities avaiable in a smaller program, which can be freely distributed (so you can give MidiMover away to all your friends, so that they will be able to use the files you create with your Hybrid Arts programs!).

MidiMover is basically a version of MidiTrack ST with most of the features not needed for MIDI File conversion removed. The screen layout and user interface is the same as that in all Hybrid Arts sequencers.

Note:
To save or load a Hybrid Arts format Song File, select Save SNG/MID File or Load SNG/MID File from the File menu ***with the Left button*** (or press Alternate S or Alternate L without pressing Clr/Home first). The mute indicators are up/down arrows next to the track names. Click on the arrow with the Left button to turn the track ON (unmute it); click with the Right button to turn the track OFF (mute it).

APPENDIX G
GLOSSARY

This is The Glossary:

- It Contains Key Words From Each Chapter
- It Also Defines Other Important/Relevant Terms

AFTER TOUCH

Some MIDI keyboards can detect how hard you press down on a key once it is all the way down. This pressure sensitivity is often referred to as After Touch (you "touch" they key when you first play it; later when you press down on it this is "after touch"). Many synthesizers can vary the sound of a note by responding to After Touch.

There are two kinds of After Touch: Channel Pressure and Polyphonic Key Pressure. Channel Pressure, commonly referred to as after touch, is the most widely used. With Channel Pressure, all notes on a keyboard (and therefore on one channel) are affected by one note's pressure changes, so if you hold down a chord with your left hand, and increase the pressure on a single note in the right hand, the pressure affects the left-hand chord as well as the right-hand note.

With Polyphonic Key Pressure, on the other hand, each key has a separate pressure sensor, and each note can be individually affected by pressure. Because of the higher cost of individual pressure sensors per key, relatively few keyboards have Polyphonic Key Pressure.

ALL NOTES OFF

A MIDI message that does just what it says: turns all the notes off. This may be useful when you have some "stuck" notes. However, this is an optional part of the MIDI Spec, *not* designed to replace Note Off messages, and many instruments ignore it.

ATTACK

How fast a note reaches its maximum volume. Percussive instruments have a fast attack, slowly bowed strings have a slow attack.

The beginning part of a note. Attack Velocity refers to how fast the key travels down (at the beginning of the note); Release Velocity refers to how fast the note is released (at the ending of the note).

AUTO-LOCATE
A feature that allows you to specify any point in the song and instantly cue up to that point.

BACKUP FILES
A duplicate of a file, usually stored in a separate place than the original.

BANK
Synthesizer patches are stored as groups of sounds known as banks. Banks are a simple method of organizing or categorizing a group of sounds Some synths contain more than one bank and allow you to switch from one to another.

BEAT
In this manual, the term beat usually means a *quarter-note* beat. This is the basic unit in which MidiTrack ST counts time within the song.

BOUNCE
The process of combining (mixing) separate tracks into one.

BOW-OUT
To mute (turn off) a particular track while turning *every other* track on (unmuted).

BUFFER
Memory that that has been set aside for a specific purpose, usually as a temporary storage location. The Record Buffer's purpose is to hold all recorded MIDI information until you KEEP it (store it permanently) to a track.

BYTE
A fundamental unit of computer memory. It is a grouping of eight bits (a bit is a "binary digit" that has a value of either 0 or 1) with 256 possible values. For example, a byte may represent a note number, or one of the letters of the alphabet.

CHAIN
A sequential arrangement of Sections (patterns) of music.

CHANNEL PRESSURE
See **AFTER TOUCH**

CHASE
Chasing means synchronizing to an tape sync source no matter where within the sync track you start. In SmpteTrack, you can chase to anywhere in the song almost instantly by using SMPTE sync.

When working with analog machines such as MTRs (Multi-Track Recorders) and VTRs (Video Tape Recorders) that have physical transports, chase refers to the time it takes for one machine to lock up to the other one (the slave machine chases after the master machine until they are synced). This can take up to 20 or 30 seconds.

CLOCK
1 An electronic timing pulse for use in synchronizing sequencers with a common timing reference.

2 A breakdown of a (quarter-note) beat into 24, 48 or 96 units. MIDI synchronization is based on 24 clocks per beat. MidiTrack ST divides its beats to a resolution of 96 clocks or divisions of a beat Also known as **TICKS**.

COMPRESS
In audio, to reduce the volume range between the loudest and the softest sounds. In MidiTrack ST, to reduce the range of velocity values to produced a similar effect.

CONTROL CHANGE
The MIDI assignment of numbers for different types of controllers. The sustain pedal has specific Control Change number that almost all synth manufacturers adhere to, #64. Other numbers can represent other controls, such as a MIDI volume pedal (#7), mod wheel (#1), or breath controller (#2).

COUNTER
A numerical representation of where one is located in the song (either in beats.ticks or measures|beats.ticks).

CUE
1. A piece of music (or a sound effect) written for a specific section of a visual medium, such as film or video.

2. To locate to a particular point in the song, as in cue up. Clicking either Play or the Reset Button in MidiTrack ST causes it to cue to the beginning (or Start Time if Auto-Locate is enabled)

CUE LIST
In film or video, a list of selected times, usually expressed in terms of SMPTE Time Code, at which visual events requiring musical accent or sound effects occur.

CUT AND PASTE
The action of cutting (or copying) a section of information (text in a word processor, music in a sequencer) from one place and placing it somewhere else.

DEFAULT
A predetermined starting value for a setting. When you run MidiTrack ST, it starts with a tempo value of 120 BPM; thus 120 BPM is the default tempo setting. If you use the **AUTOLOAD.SNG** feature (see Chapter 6), you can change the default, so that, for example, the program always comes up set to 110 BPM.

DESK ACCESSORY
A mini-program that is loaded into memory when the Atari ST is turned ON or reset. Accessories MUST be on the disk in the main drive at that time. These programs stay in memory until you turn the computer OFF or reset. Use Accessories by selecting them from the **Desk** menu.

DURATION
The length of a note from the point a Note On message occurs to when a Note Off is issued.

FILM CLICK
A timing system developed to aid composers in writing music for film based on a 24-frame-per-second rate. Holes were punched on the sprockets of a piece of film at precise intervals, which produced audible clicks as the film went through a projector. Using these clicks as tempo references, composers could accurately write cues against the picture.

FLATTEN
The process of taking a track or series of tracks that have been looped, and turning them into linear tracks, ie. "flattening " out looped tracks.

FSK (TYPE O or R)
FSK stands for Frequency Shift Keying; Type O or R refers to two manufacturers, Oberheim and Roland, who have slightly different methods of reading and writing this code. FSK is a type of synchronization method, whereby alternating frequencies are used (instead of clock pulses) to sync drum machines or sequencers to tape.

GLOBAL
Having to do within overall functions; ie; a global transposition will affect all the tracks in the song.

GLUE SECTION
The action of relocating a section of a track to another point. See **CUT AND PASTE**.

HEX
Short for Hexadecimal, meaning base 16. Computers deal in a binary universe, as electronics easily translates to an ON/OFF state of affairs. Whereas decimal (base 10) counting involves 10 digits from 0 to 9, hexadecimal involves 16 digits (0 to 9 followed by A to F) Exactly two hex digits can represent a byte value (between 0 and 255, written as FF in hex). Thus hex can sometimes make the meaning of computer data more obvious than decimal would.

HIT POINTS
Moments in video or film that require musical accent or effects. See **CUE LIST**.

HUMANIZE
The action of selectively randomizing the accuracy of quantization so that tracks have a less rigid "feel" to them. For example, instead of auto correcting the timing accurately to every beat, one can decide to randomly vary the timing around the beat, simulating the slight imperfection of a person performing the music.

HYBRISYNC
A 1200 Hz tone used for synchronization to tape, mostly by SyncTrack users. It has the tempo-independent nature of SMPTE, though it lacks the Chase capability and relative dropout/crosstalk immunity of SMPTE.

ICON
A symbol or image used to represent a concept or physical device. For example, in MidiTrack ST an icon of a boxing glove represents the Punch feature.

INTERFACE
1. The method of communication and interchange between a user and a program. There are several means of interfacing with MidiTrack ST, either with a mouse or the ST keyboard.

2. A device for making such communication possible. A MIDI interface (built-in on the Atari ST, but an extra option on other computers) provides the circuitry necessary to communicat via MIDI. The SMPTEmate that comes with SmpteTrack is an interface to tape decks and drum machines.

3. Interface is also used to denote the ease of use of this communication process between program and user.

JAM SYNC
The action of regenerating fresh SMPTE Time Code using previously recorded code as a source. Even if the original code contains errors or dropouts, jam syncing allows one to create new, uninterrupted code.

LINEAR TRACK
A track recorded in (or edited into) one piece from beginning to end, as opposed to being made up of chained sections. See **CHAIN**.

LOCAL ON/OFF
A MIDI command which allows separates the keyboard part of a keyboard instrument from its sound-generating part. See description in Chapter 6.

LOCK
A term describing a condition when two pieces of devices are in synchronization with each other.

LONG-CLICK
To hold the mouse button depressed for more than a quarter of a second. On the Graphic Screen, some functions are selected by Long-Clicking as opposed to Short-Clicking, to allow more actions to be taken with less mouse movement. See **SHORT-CLICK**.

LTC
Longitudinal Time Code (LTC) is SMPTE time code information that is recorded onto an audio track of either audio or video tape. LTC is different than VITC (Vertical Interval Time Code), in that VITC is time code information that is embedded in the video information of a video tape. LTC is the type of time code used by SmpteTrack II. See **SMPTE**.

MASTER
In synchronization, the device that determines the timing for all other connected devices (**SLAVE**s).

MIDI
Musical Instrument Digital Interface. The hardware interface and communications protocol by which electronic musical instruments communicate with each other and with computers.

MIDI CHANNEL
One of 16 separate channels used to communicate MIDI information. Synthesizers, drum machines, and other MIDI equipment can normally be "tuned" to receive MIDI data on any one of 16 channels, much like a television set can tune into different TV stations.

MIDI EVENT
A piece of information sent over MIDI as one "message". Examples of MIDI events are; Note On, Note Off, Tune Request, Patch Change, etc. When using a pitch wheel, one MIDI event is one movement of the pitch wheel, not the whole bend (which may consist of hundreds of events).

MIDI IN/OUT/THRU
The means by which MIDI equipment is connected. MIDI data is transmitted out the MIDI Out port. MIDI data is received on the MIDI In port. A MIDI Thru port (not the same as the sequencer's Thru function), which is optional, provides an exact copy of the data arriving at the MIDI In port with no timing delay. MIDI communication is possible when a cable is connected from one device's MIDI In to another device's MIDI Out.

MIDI SPEC
The MIDI 1.0 Specification is the official document that defines the MIDI standard (both the hardware and the communication protocol). Copies can be obtained from the IMA (International MIDI Association) in Los Angeles.

MIX
1. To establish relative volume levels, sound placement, EQ settings, and a number of other details to produce a final, cohesive recording.

2. To combine (**BOUNCE**) several tracks together into one.

MONO MODE
A MIDI Mode where the voices in an instrument are subdivided one per channel. For example, a Casio CZ-101 can be set up so that it can play one note each on 4 channels, each channel having a different sound or timbre (hence the term multi-timbral). Another use of Mono Mode is for instruments designed to work with guitar controllers. By using a separate channel for each string, a guitar controller can then handle the independent pitch bending of each note. Also see **POLY MODE**.

MTR
Multi-Track Recorder. This can be any recording device with multiple tracks (4, 8, 16, 24, 32, or more), which allows recording on one track while playing back others.

NUMERATOR
The top part of a fraction. Since time signatures are written in a style similar to fractions (eg, **4/4**), Numerator is also used to refer to the number of beats in a measure (denominator then referring to the beat value).

OMNI ON/OFF
Omni On is a mode in which a MIDI device receives and acts on MIDI information on any of the 16 MIDI channels (ie, it ignores the channel numbers on messages). This was often used in the early days of MIDI to make hookups between two synthesizers (which might otherwise be set to different channels and thus not communicate) simple.

Omni Off is the opposite mode, where the receiving MIDI device looks at the MIDI channel on each message and only acts on message on the channel(s) it has been set for.

OVERDUB
The action of recording music on another track while playing back music recorded previously on other tracks.

PATCH
A specific sound program on a synthesizer. Changing the patch on an instrument means calling up a different sound from a stored definition. Originally, synthesizer sounds were generated by connecting oscillators and amplifiers together via patch cables, hence the term patch.

PITCH BEND
A means of varying the pitch of a note as it plays by using a controller such as a pitch wheel. The maximum range of a pitch bend is determined by a setting on the instrument.

PIXEL
Short for "picture element". The smallest unit of display on a computer monitor, thus also the smallest possible unit of movement for the mouse. On the Atari ST, the monochrome screen (high resultion) is 640 pixels wide by 400 pixels tall. The color screen in medium resolution is 640 pixels wide by 200 pixels tall.

POLY MODE
A MIDI Mode where all the available voices (notes) in an instrument are assigned to one MIDI channel. (A split mode or multi-channel mode, available on some instruments, actually treats the device as multiple "instruments", each in Poly Mode on one channel.) Also see **MONO MODE**.

POLYPHONIC KEY PRESSURE
See **AFTER TOUCH**

PPQ
Pulses Per Quarter Note: how many steps a quarter-note is divided into, either in sequencer storage (then often referred to as "**TICKS** per **BEAT**") or in synchronization. The internal storage of MidiTrack ST is 96 ppq. MIDI Clock synchronization has one-quarter that resolution, since it is 24 ppq. Most hardware synchronization methods that are tempo-related (such as FSK and TLL) operate at either 24, 48, or 96 ppq. Also see **CLOCKS**.

PSEUDO NOTE OFF
The **MIDI SPEC** allows for the turning off of a note to be represented in two different ways. One way is by an actual ("real") Note Off message, which includes a **RELEASE VELOCITY** value. The other method is to send it as a Note On with a velocity value of 0. All instruments should interpret either of these messages as a command to turn off the note.

PUNCH IN / PUNCH OUT
The action of replacing information on a track between a Start Time and an End Time. On simple multi-track recorders, you Punch In (record on the Punch track) by pressing a switch, and Punch Out (stop recording on that track while continuing to roll the tape) by letting up on the switch. In advanced MTRs and most sequencers, you can predetermine the Start Time and End Time, and have the track automatically mute and go into record at those points. Also known as Automated Punch.

QUANTIZE
To correct the timing of a performance. For example, by quantizing a track to quarter notes, all notes on the track that are not on exact quarter-note beats will be placed on the nearest beat. If the timing was too far off to start with, though, the "correction" can move some notes in the wrong direction.

RAM
Random Access Memory. That portion of a computer's memory used for temporary storage of changeable information, as opposed to ROM (Read-Only Memory) which is unchangeable memory. Unless battery-backed-up, RAM "forgets" when the computer (or device essentially containing a computer, as most modern instruments do) is turned off.

REGISTER
One of 27 storage locations in MidiTrack ST which hold track mutes, tempo, and Start/Punch-In/Punch-Out/End Time values.

RELEASE VELOCITY
The speed with which you release a note. Some synths recognize this MIDI parameter (sent as part of a "real" Note Off message) and allow for different effects depending on the release of the key. Also see **PSEUDO NOTE OFF**.

ROM
Read Only Memory. Memory that is not lost when the computer (or other device) is powered off (and needs to battery backup) and is unchageable (except, perhaps, by replacing the ROM chips).

SECTION
A defined portion of a track (or multiple tracks) that can be then be used as part of a sequence or **CHAIN**. Similar to a pattern on a drum machine.

SHADOW TRACK
A track which essentially "points to" another track, and thus functions as if it were a copy of the original track, while using no additional memory.

SHORT-CLICK
In the Graphic Screen, pressing the mouse button and releasing it quickly (in less than a quarter of a second). See **LONG-CLICK**.

SLAVE
In synchronization, a device that receives its timing from (is under the control of) another device (the **MASTER**).

SMPTE TIME CODE
A synchronization code developed by NASA and adopted by the Society of Motion Picture and Television Engineers (for which SMPTE is an acronym). By generating a digital signal representing time (Hours, Minutes, Seconds) and a video reference (Frames and Sub Frames), accurate syncing of MTR's and VTR's can occur. Because each piece of digital information in the sync track identifies the *time* within the track (hence the term Time Code), starting at the beginning of the tape to synchronize is not necessary with this form of tape sync.

STEP RECORD
To record MIDI information by stepping through time manually, inputting events one piece at a time.

SYSTEM EXCLUSIVE (SYS EX)
A "catch-all" message, used differently by each manufacturer/instrument, for sending any information over MIDI for which there is no specific MIDI message. Most commonly used for patch/bank dumps and device-specific parameter settings. Sys Ex messages are the only MIDI messages that are of variable (and unlimited) length, and that have no predefined meaning.

TTL
TTL stands for Transistor-Transistor Logic, a type of electronic standard where voltages are either 0 (ground) or 5 volts. TTL is a synchronization method where each pulse (from 0 to 5 volts and back to 0) represents one clock, and is most often used with pre-MIDI drum machines. It is not suitable for use with tape machines.

UNMIX
To separate note values from a specified track by MIDI channel assignment or by high and low limits for notes.

VTR
Video Tape Recorder

VELOCITY
The speed at which a key travels as you press it (if referring to Attack Velocity). In practice, this is essentially a representation of how hard you strike the key. Most synthesizers (the least-expensive ones are the exception) are velocity sensitive, and can generate a variety of effects (increase in volume, brightness, etc) based on an increase in velocity. Also see **RELEASE VELOCITY**.

ZOOM
In Graphic Editing, to increase the resolution of the information display you're looking at, as if zooming in with a camera.

APPENDIX K
KEY COMMANDS

This Appendix Lists:

- All keyboard commands which make it possible to perform many of the functions available using the Atari ST keyboard

- Menu Commands
- Control Column/Fader Commands
- Track Display Commands
- Control Display Commands
- Screen Commands

In reference to the Commands listed on the following pages:

- **Control** means HOLD DOWN the Control key, then press the letter
- **Shift** means HOLD DOWN the Shift key, then press the letter
- **Alternate** means HOLD DOWN the Alternate key, then press the letter
- In some cases, combinations of the above special keys are held down at the same time

- **Numeric** refers to a key on the *Numeric* Keypad at the far right of the keyboard

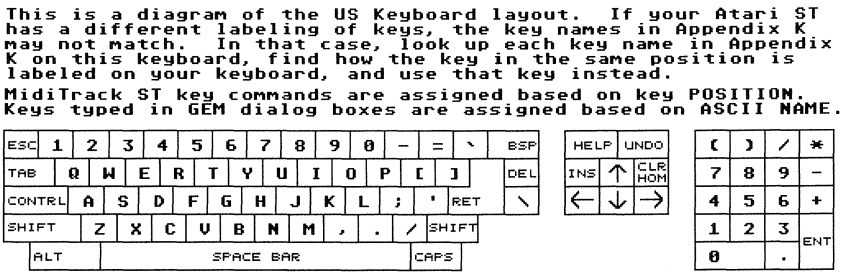
- All other keys or mouse buttons as they appear

For example,

Control Numeric (

means:

Hold down the Control key. Then press (on the Numeric Keypad.


This is a diagram of the US Keyboard layout. If your Atari ST has a different labeling of keys, the key names in Appendix K may not match. In that case, look up each key name in Appendix K on this keyboard, find how the key in the same position is labeled on your keyboard, and use that key instead.
MidiTrack ST key commands are assigned based on key POSITION. Keys typed in GEM dialog boxes are assigned based on ASCII NAME.
ESC 1 2 3 4 5 6 7 8 9 0 - = ` BSP
TAB Q W E R T Y U I O P [ ] DEL
CONTRL A S D F G H J K L ; ' RET \
SHIFT Z X C V B N M , . / SHIFT
ALT SPACE BAR CAPS
HELP UNDO
INS CLR HOM
( ) / *
7 8 9 -
4 5 6 +
1 2 3 ENT
0 .

Menu Commands

MENU	OPERATION	ST KEYBOARD
File	Load SNG/MID File	Alternate L*
	New Song	Alternate N
	Import Track	Alternate I
	Save SNG/MID File	Alternate S*
	Update	Alternate U
	Perform Set	Alternate P
	Build Set	Alternate B
	Delete File	Alternate D
	Format Disk	Alternate F
	HybriSwitch	(See Appendix H)
	Quit	(no key equivalent)
	* To Load or Save MID (MIDI) Files, first press ClrHome, then press the key command shown above.	
Track	Shadow Info	Control Shift S
	Protect Track	Control P
	Unprotect Track	Control Shift P

MENU	OPERATION		ST KEYBOARD
Edit	Copy/Swap Track		Control C*
	Shadow Track		Control S
	Mix Tracks		Control M
	eXtract Channel	/r	Control X**
	Unmix Channels		Control U
	ZoneSplit Track	/r	Control Z**
	KeySplit Track		Control K
	Flatten Chain		Control F

	Insert/Remove Time		Control I*
	Glue In Section		Control G
	Alter Timespan	/r	Control A**

	Quantize Track	/r	Control Q**
	Humanize Track	/r	Control H**
	Durate Track	/r	Control D**
	Transpose Track	/r	Control T**
	Velocity Adjust	/r	Control V**
	Replace Every	/r	Control R**
	Eliminate Every	/r	Control E**
	Optimize Every	/r	Control O**
	Level Hold Pledal		Control L

* To Swap Tracks or to Remove Time, first press ClrHome then press the key command shown above.

** To only affect defined Register Regions, first press ClrHome then press the key command shown above.

MENU	OPERATION	ST KEYBOARD
Inspect	Graphic Screen Event List --- Chain Tempo Track Meter Track --- Sections Key Command Macros	Shift G Shift E Shift C Shift T Shift M Shift S Shift K
Options	User Preferences Lead All	Control Alternate Shift U Control Alternate Shift L

Control Column / Fader Commands

OPERATION	MOUSE CLICK	ST KEYBOARD
Change all MidiPlexer Out Port values	Shift Click on Port	Control Shift C
Remove Fader	On Fader Channel's value	Control Shift F

Track Display Commands

OPERATION	MOUSE CLICK	ST KEYBOARD
Select A Track	Track Pointer	1thru 0 Shift 1thru 0 Up/Down Arrow
Find Next Empty	(no click equivalent)	Help
Unmute (Track ON)	Track Arrows (L)	Shift Up Arrow
Mute (Track OFF)	Track Arrows (R)	Shift Down Arrow
Solo (Only 1 ON)	Track Arrows (L+R)	Control Up Arrow
BowOut(Only 1 OFF)	Track Arrows (R+L)	Control Down Arrow
Unmute All Tracks	(no click equivalent)	Control Shift Up Arrow
Mute All Tracks	(no click equivalent)	Control Shift Down Arrow
Multi-Functions • Track Percentage • Track Offset • Track Transpose • Chain Activity	Multi-Function Switch	Control Numeric -
Toggle current track in/out of Section	Track Name area	Undo
Track Offset or Transpose		
• Increase Amount	toward right of value	Numeric +
(in bigger steps)	toward left of value	Shift Numeric +
• Decrease Amount	toward right of value	Numeric -
(in bigger steps)	toward left of value	Shift Numeric -
Track MIDI Channel	MIDI Channel Column (L/R)	Control 1thru 0 Control Shift 1thru 6 Control Shift 0 Shift [OR]
Track Output Port	Track Port Column	Shift ;
Scroll Tracks	Scroll Bar	F1 thru F5
Find Track Pointer	(no key equivalent)	F6
Name Track	Track Name	Control N
Delete Track	Track Name area	Control Shift D
Delete Track Plus	Track Name area	Control Shift Alternate D

Control Display Commands

OPERATION	MOUSE CLICK	ST KEYBOARD
Transport Controls		
Countoff	Countoff	Backspace
STOP	Stop Icon	Return
PLAY	Left on Play Icon	Space Bar
PLAY without Countoff	Right Click on PLAY	ClrHome Space Bar
PAUSE / Continue	Pause Icon	Tab
KEEP	Left on KEEP icon	Shift Enter Enter (with Safety OFF)
KEEP to next empty	Right on KEEP icon	Alternate Enter
Wipe KEEP buffer	Alt Click on KEEP	Alternate Space Bar
LOOP PLAY (Register Mode only)	Right on Cycle icon	ClrHome Shift Numeric /
Cycle Record	Left on Cycle icon	Shift Numeric /
Quantized Record	Quantized Record	Control Shift Q
Record Filter		
• Rehearsal ON/OFF	Left on Record Filter	Control Shift Z
• All Events / Notes	Right on Record Filter	Control Shift A
Reset Counter	Counter Reset (L)	Control Space Bar
Silent Re-Cue	Counter Reset (R)	Shift Space Bar
Step Time		
• Beat	Counter L of dot	Shift Tab
• Clock	Counter R of dot (L)	Control Tab
• 16ths	Counter R of dot (R)	/
Sync		
Sync Type	Sync Icon	Shift ‘
SMPTE Chase		
• Equal Mode	Play OR Pause icon	Space Bar OR Tab
• Unequal Mode	Pause icon	Tab
	Play icon	Space Bar (sends clock) (see Chapter 9)
Tempo		
Fine	Tempo Value	. OR ,
Coarse	Tempo Quarter Note	Shift . OR ,
Metronome		
ON/OFF	Speaker Icon (L)	‘
• Toggle Speaker-MIDI	Speaker Icon (R)	Control ‘

OPERATION	MOUSE CLICK	ST KEYBOARD
Register/Section Mode	Register/Section Icon	Shift ~
Registers		
Name Register	Shift Click on name	Control Shift N
A1-A9	Register Icon	Shift F1thru F9
B1-B9	Register Icon	Control F1 thru F9
C1-C9	Register Icon	Control Shift F1 thru F9
Activate Auto-Locate	Locate Bar	Numeric *
Activate Punch	Punch Icon	Numeric /
Sections		
Name Section	Shift Click on name	Control Shift N
Find New	FIND NEW	Shift Numeric 7
Make Next	MAKE NEXT	Shift Numeric 8
Copy To Next	COPY TO NEXT	Shift Numeric 9
Reset Section to empty	Alt Click on Section #	Control Shift Numeric 9
Transpose Global		
• by Half-Step	Accidental Column	Left/Right Arrow
• by Octave	Transpose Icon	Shift Left/Right Arrow
• Exception Channel	Transpose Ch Icon	Control Shift [OR]
Patch Changes		
• by Patch	Patch Number	Numeric (OR)
• by Bank	Patch Icon	Shift Numeric (OR)
• Patch MIDI Channel	Patch Ch Icon	Control Numeric (OR)
• Patch Change Port	Patch Change Port	Control ;
• Record Patch	(no click equivalent)	Control Alternate Shift P
Thru		
ON/OFF	Thru Box	=
MIDI Channel	Thru Ch Icon	[OR]
Port	Thru Port	;
Miscellaneous		
Disable Mouse	(no click equivalent)	Control Numeric 0
Turn Off sustain notes	(no click equivalent)	Control Shift X

Screen Commands

INSIDE THIS SCREEN	OPERATION	ST KEYBOARD
Graphic Screen	Delete Selected Note	Delete
	Play Screen	Space Bar
	Stop (while Playing)	Return
	Flip	Esc
	Exit	Return
Event List	Move Up 1 Event	Up Arrow
	Move Down 1 Event	Down Arrow
	Move Up 18 Events	Shift Up Arrow
	Move Down 18 Events	Shift Down Arrow
	Affirm Edit	Insert
	Cancel Edit	ClrHome
	Delete Current Event	Delete
	Flip	Esc
	Exit	Return
When prompted to Select Source or Destination Tracks to Edit/Inspect	Scroll Tracks	F1 thru F5
	Find Track Pointer	F6
	Select A Track	1 thru 0
		Shift 1 thru Shift 0
		Up/Down Arrow
	Choose Source Track	Insert
	Choose Destination	ClrHome
	Cancel	Undo

APPENDIX O
OVERVIEW

This Chapter Contains:

An overview of the structure of the program. It is simply another way to view the functions of the program as they relate to each other in large groups.

This is not a Tutorial.

- Modes
- Track Types
- Settings
- Mouse Clicking

MODES

Modes can be thought of as switches. You are either in a mode or you're not. Related Modes toggle in a cycle from one Mode to the next. The Modes portion of this Appendix describes the most-used/related Modes found in MidiTrack ST.

There are 2 Main Control modes:

1 **Register Mode** There are 27 Registers.

3 items are stored in a Register:
(1) Track On/Off arrows
(2) the current Tempo
(3) Register Time Settings
    Start Time
    Punch-In Time
    Punch-Out Time
    End Time

Any of the above items are instantly stored in the current Register once set.

2 **Section Mode** There are 100 Sections. Each Section has a Start Time and an End Time. You can include up to 24 tracks in each Section. A Track included in a Section is called a Section-Track.

Whatever is recorded on a Section-Track between the Start and End Times of the Sections is all that will play from that track. Everything else on a Section-Track is ignored.

After defining a Section, you can do two things: (1) Glue the Section into another track, or (2) Insert the Section in a Chain.

See Chapter 4 -- Music Processing
See Chapter 5 -- Advanced Music Processing
See Chapter 6 -- Global Features

It is possible to be in 1 of 3 SYNC modes:

1 **Internal Sync**

When you see an Atari logo inside the Sync box, this indicates that when the sequence is running, it will be getting its clock from the clock inside your Atari ST.

This mode is available to all MidiTrack ST owners.

2 **MIDI Sync**

The MIDI cable Sync icon tells you that the clock is coming from an external MIDI device. The sequence will follow that device's tempo setting regardless of the Current Tempo setting on the MidiTrack ST main control screen. Song Position Pointer is always recognized by MidiTrack ST.

This mode is available to all MidiTrack ST owners.

3 **External Sync**

When a synchronization signal is sent into the SMPTEmate, and the Sync mode is set to External sync, the sequence will respond to the external signal. It will react differently for different External Sync Types.

This mode is ONLY available to SmpteTrack Owners.

See Chapter 9 -- Synchronization

There are 2 ways to view the Time and Counter settings:

1 **Beats mode** This mode keeps relative time. It starts counting from beat 00000.00 and every click of the monitors speaker is equivelant to 96 ticks (a tick is one value to the right of the decimal in the counter).

96 ticks = 1 quarter note value = 1 beat

2 **Measure mode** This mode is more in tune with standard music counting. It starts at measure 1, beat 1 (0001|01.00). When in this mode, the current metronome accents on the down beat of every measure.

See Chapter 5 -- Meter & Metronome Settings

Information about each Track is found on one of 3 Multi-Function modes. The Multi-Function Switch is found at the bottom of the Multi-Function column:

1 **Track Percentage** This is the default mode. It shows the percentage of memory each track takes up. Any track that contains data uses a minimum of 1%.

Note:
The **Total Memory Used** indicates a relative percentage to the total memory available. It is not the total of all the track percentages, due to rounding.

2 **Track Offsets** This mode lets you move all Events on a Track earlier or later in time. It works in Real Time.

The values range from -90 to +95 which is the number of ticks by which each track is Offset early (-) or late (+).

3 **Chain Activity** This mode assists in viewing the currently active Chain Tracks.

- Chain Tracks show the current Section they are playing.
- Section-Tracks show which Chain Track they are being controlled by.

See Chapter 3 -- Basic Operation
See Chapter 4 -- Track Management
See Chapter 5 -- Using Chains

On the Graphic Screen, there are 5 long-click modes.
Short-Right Click in Notes Display to cycle modes:

1 **ZOOM**	Long-Right Click to see the entire contents of a Track. Select an area and Affirm (Left) to ZOOM-In
2 **PLAY**	Select an area and Affirm (Left) to PLAY. Solo a Track or MIX with other unmuted tracks. Compare any edits with the original.
3 **ERASE**	Select an erea and Affirm (Left) to ERASE. Erase just Note-On/Note-Off or all information (Patch Changes, Sys Ex, Pitch Bend, etc.) within the selected area.
4 **ADD**	Left Click and Drag to add a Note exactly where you click. Right Click and Drag to add a Note Quantized to the nearest quarter of a grid line.
5 **MOVE**	Short Click Left to Select a Note. Once Selected: • Left Click & Hold to MOVE Note On • Right Click & Hold to MOVE Note Off • Both Click & Hold to MOVE the entire Event (Note On & Off)

See Chapter 7 -- Graphic Editing

TRACK TYPES

There are a number of different types of information that can be saved on a track. There are 60 tracks. Each track can contain 1 of 5 types of information:

1 **MIDI Tracks** — Any MIDI information that you play via a MIDI keyboard MIDI Out to the MIDI In on your Atari ST. This includes Note On, Note Off, Velocity, Pitch Bend, Aftertouch, Release Velocity, Controller Changes, System Exclusive messages, and so on.

: — This Track Type is indicated by a **:** (colon) next to the track number.

2 **Chain Tracks** — This type of track stores the group of Sections that you list one after another when assembling a chain.

c — This Track Type is indicated by a small **c** next to the track number.

3 **Meter Tracks** — Similar format to Chains, except the information is Meter changes.

m — This Track Type is indicated by a small **m** next to the track number.

4 **Tempo Tracks** — Similar again, except Tempo change information.

t — This Track Type is indicated by a small **t** next to the track number.

5 **Shadow Tracks** — This track is a duplicate of another (MIDI) track.

s — This Track Type is indicated by a small **s** next to the track number.

SETTINGS

Most of the remaining functions found in MidiTrack ST can be thought of as (1) Visual information and (2) Settings.

An example of **Visual Information** is the Total Memory Used indicator. It shows you what percentage of available memory has been used so far.

There are too many **Settings** to list all of them here, but a small example is listed below to get you started:

Global Settings

Current Tempo
Current Resigister (when in Register mode)
Current Section (when in Section mode)
Current Meter marking
Metronome (On or Off)
Global Transpose
Remote Patch Changer
MIDI Thru On (check) or Off (no check)
MIDI Thru Channel
Patch Numbering
All Safety menu Settings

Individual Track Settings

Track Output MIDI Channel
MIDIPLEXER Output assignment (MIDIPLEXER ONLY)
Track On (up arrow) or Off (down arrow)
Currently Selected Track (arrow in far left column)

MOUSE CLICKING

Described throughout the manual are several ways to click either mouse button while holding a combination of Atari Keyboard keys. (A summary of all the key commands can be found in **Appendix K -- Key Commands**.)

In a short, these are the different combinations of mouse clicking:

Left Click	Click the Left Mouse Button
Right Click	Click the Right Mouse Button
Both Click	Click the Left and Right Buttons Simultaneously
Shift Click	Press and hold either Shift key / Click Left or Right
Long Click	Click and Hold appropriate mouse button (> 1/4 sec)
Short Click	Quickly Click appropriate mouse button (< 1/4 sec)

There can be just about any combination of the above as well. Practice each one until you feel comfortable.

This section was not intended to instruct you. It is just to let you get a quick look at the main points of the program without getting into detail. Now that you've seen these main topics and functions once, refer back to this Appendix from time to time as you learn more about the details. It will eventually all fall into place.

Note:
For a more detailed description of the above Modes and Settings, please refer to the Index or applicable chapters where noted.

APPENDIX R
MENU BAR REFERENCE

In This Chapter:

- Desk Menu
- File Menu
- Track Menu
- Edit Menu
- Inspect Menu
- MIDI Menu
- Box Menu
- Options Menu
- Safety Menu

Across the top of the screen lies the Menu bar, where most of the options of MidiTrack ST can be accessed. This chapter gives a brief description of each of the functions and directs the user to the chapter and section for a more detailed explanation of its function. This can serve as a quick reference for experienced users or provide a place to refer to functions as they're laid out on the screen, as opposed searching through the manual for the answer.

DESK MENU

SysXpress

A Desk accessory that allows loading of Hybrid Arts' GenEdit files into your synths without having to exit the program.
Chapter 6 (Patches, SysXpress Accessory)

SMPTEmate

A Desk accessory that Reads and Writes SMPTE. Used in striping your multitrack or VTR and for relaying fresh Time code.
Chapter 9 (External Sync, SMPTE)

FILE MENU

Load SNG/MID File Loads in either a previously saved song or a MIDI File.
Chapter 3 (File Management) & Appendix C

New Song Erases the current song from memory (not from disk) and lets you start a new one.
Chapter 6

Import Track Allows the merging of files through selecting individual tracks and combining them with the current song you're working with.
Chapter 4 (Track Management)

Save SNG/MID File Saves the song you're working on to disk. A File Selector prompts you to enter a name for the file.
Chapter 3 (File Management) & Appendix C

Update Saves the song your working on to disk (without asking for a file name). You must save the current file once before this option to becomes available.
Chapter 3 (File Management)

Perform Set Plays a Set of songs, as previously specified by Build Set.
Chapter 3 (File Management)

Build Set Defines a Set of songs to be played one after the other.
Chapter 3 (File Management)

Delete File Allows you to delete files of any type from any disk.
Chapter 3 (File Management)

Format Disk Format a disk, single or double sided, in Drive A or B.
Chapter 3 (File Management)

HybriSwitch Allows access to other programs using Hybrid Arts' HybriSwitch software. You can switch between up to 10 programs by pressing a button.
(See your Authorized Hybrid Arts Dealer for details)

Quit Exits the program and returns to the desktop.
(No detailed description needed)

TRACK MENU

Shadow Info Shows a summary of a Track and all related Shadows.
Chapter 4 (Track Management, Shadow Track)

Protect Prevents accidental erasure of a track.
Chapter 3 (Tracks, Track Protection)

Unprotect Turns off the track protect.
Chapter 3 (Tracks, Track Protection)

EDIT MENU

Copy/Swap Track Copies a specified track to another track, or exchanges two tracks.
Chapter 4 (Track Management)

Shadow Track Creates a copy of information on a track without actually using more memory. The shadow track refers to the original track for its data.
Chapter 4 (Track Management)

Mix Tracks Mixes one or more tracks to another specified track, including any MIDI channel assignments, delays, etc.
Chapter 4 (Track Management)

eXtract Channel Copies specified channels to another track, optionally removing them from the original track.
Chapter 4 (Track Management)

Unmix Channels Puts each channel on a separate track.
Chapter 4 (Track Management)

ZoneSplit Track Copies a range of notes to another track, optionally removing them from the original track.
Chapter 4 (Track Management)

KeySplit Track Puts each note on a separate track.
Chapter 4 (Track Management)

Insert/Remove Time Allows you to insert blank time in the middle of a track. Or it allows you to remove time from a track.
Chapter 5 (Advanced Editing Features)

Glue In Section

The cut-and-paste feature. Copies and Glues a Section to a blank track or in the middle of an existing MIDI Track, up to 999 times in a row.
Chapter 5 (Section Mode, Two Uses For Sections)

Alter Timespan

Stretches or compresses a track in time.
Chapter 5 (Advanced Editing Features)

Flatten Chain

Flattens a chain track and changes the information in it to a linear track.
Chapter 5 (Section Mode, Flatten Chain)

Quantize Track

Corrects the timing to any reference value without altering the information on the original track.
Chapter 4 (Editing Features)

Humanize Track

Quantizes a track giving the user control over how close the notes are corrected to the reference value (by randomly placing notes near or far from this reference).
Chapter 4 (Editing Features)

Durate Track

Adjusts the length of notes in a track to a specified value.
Chapter 4 (Editing Features)

Transpose Track

Changes the transposition of notes on a track by steps, plus or minus 9 octaves.
Chapter 4 (Editing Features)

Velocity Adjust

Permits fine adjustment of velocity values contained on a track, including attack and release velocities,three methods of adjustment, compression or expansion, Hi/Lo parameters and other features.
Chapter 5 (Advanced Editing Features)

Replace Every Lets you change every controller event of one type in a track, to any other controller.
Chapter 5 (Advanced Editing Features)

Eliminate Every Lets you delete every controller event of a particular type from a track.
Chapter 5 (Advanced Editing Features)

Optimize Every Thins out controller data.
Chapter 5 (Advanced Editing Features)

Level Hold Pedal Turns a track with Hold Pedal into a track without Hold Pedal that plays the same.
Chapter 5 (Advanced Editing Features)

INSPECT MENU

Event List

Allows entry to the event list, whereby one can edit (as text) any MIDI event recorded on the track, down to the byte level.
Chapter 8 (Text Editing)

Graphic Screen

Allows entry to a graphic editing screen, where you can draw pitch bends, point and move notes and view a track in graphic representation.
Chapter 7 (Graphic Editing)

Chain

Allows you to Chain defined Sections together so they play one after another.
Chapter 5 (Section Mode, Two Uses For Sections)

Tempo Track

Provides a means of varying the tempo at any point(s) in the track.
Chapter 5 (Advanced Editing Features)

Meter Track

Provides a means of varying the Meter at any point(s) in the track.
Chapter 5 (Advanced Editing Features)

Sections

Provides a method to quickly review any of 100 sections defined by the user.
Chapter 5 (Section Mode, Inspect Sections)

Key Cmd Macros

Lets you combine multiple key commands into one keystroke.
Chapter 6

MIDI MENU

Send Mode Msg Allows a variety of MIDI Mode messages to be sent over specified MIDI channels.
Chapter 6 (MIDI Mode Messages)

Input Filters Gives the user control over which types of MIDI information is to be recorded and allows filtering out of unwanted events.
Chapter 6 (MIDI Input Filters)

Output Options Provides several different MIDI output types to ensure more synth and drum machine configurations are covered.
Chapter 9 (MIDI Output Options)

Metronome Notes Lets you determine which notes on which channel will be used for the MIDI Metronome.
Chapter 3 (Recording)

Channel Settings Allows you to define the patch numbering format and velocity/volume handling for each instrument.
Chapter 6 (Patches, Channel Settings)

Control Chg Names Lets you assign names to Control Change numbers you use often.
Chapter 6

MidiPlexer Input Lets you offset the channel number of data recorded from input B. Only available when using the MidiPlexer.
Chapter 3 (Recording)

BOX MENU (SmpteTrack Only)

Ext Sync Type

Gives ten different choices of external sync type for the user to select from.
Chapter 9 (External Sync)

Output Sync

Provides seven types of sync to be output to tape or external devices.
Chapter 9 (External Sync)

Write HybriSync

Permits the use of a 1200 Hz tone to be written to tape as a synchronizing method.
Chapter 9 (External Sync)

SMPTE Type

Allows you to select a SMPTE Time Code frame rate.
Chapter 9 (External Sync)

OPTIONS MENU

Punch Method — Selects between Note or Event methods of punching.
Chapter 6

Early Amount — When Note punching, starts recording this amount earlier than the exact set Punch In Time.
Chapter 6

Rounding Amount — Allows you to adjust the amount the Right button rounds off the Time values to.
Chapter 6

Quantize Method — Selects between moving the note when quantizing, or shifting only the attack of the note (shortening or lengthening the duration).
Chapter 6

Fader Precision — Gives you choices in resolution for the Fader associated with the Control Column.
Chapter 3 (Recording)

Cycle Take Mode — Select between Layered and Alternate Take Modes for Cycle Recording.
Chapter 5 (Sections, Cycle Recording)

Note Capacity — Shows total song memory available.
Chapter 3 (A Tour of MidiTrack ST)

User Preferences — Lets you load, save, and set various user preferences that relate to your studio setup or preferred work habits (rather than to a particular song).
Chapter 6

Auto Inject File

Defines which GenEdit/GenPatch ST file to automatically load into a synth when you load in a song.
Chapter 6 (Patches, Auto Inject)

Initialize Song

Returns MidiTrack ST to factory defaults (erasing all tracks and resetting all values).
Chapter 6

SAFETY MENU

Entering Menu

Either you may enter the Menu bar directly, or only by clicking the Left mouse button.
Chapter 6 (The Safety Menu)

Shift + Enter

Either the Shift key alone or a combination of Shift + Enter is required when using the ST keyboard to store MIDI information to a track.
Chapter 6 (The Safety Menu)

Deleting

Either the user is warned or not when deleting a track.
Chapter 6 (The Safety Menu)

Replacing

Either the user is warned or not when replacing a track.
Chapter 6 (The Safety Menu)

Nothing to...

When checked, it warns you if you try to delete or Keep (using a key command) when there is nothing to delete or Keep.
Chapter 6 (The Safety Menu)

Back Up Files

You may choose whether to automatically create backups for your songs whenever you save your files to disk, or not.
Chapter 6 (The Safety Menu)

Chain Reassembly

If checked, if warns you whenever the program needs to automatically reassemble a chain.
Chapter 6 (The Safety Menu)

Section Length

When checked, if prompts you for a Section Length when you try to play a zero-length Section.
Chapter 6 (The Safety Menu)

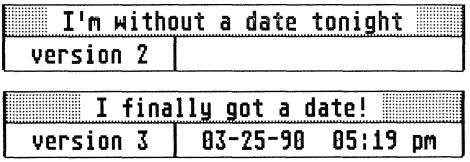
APPENDIX T
TROUBLESHOOTING

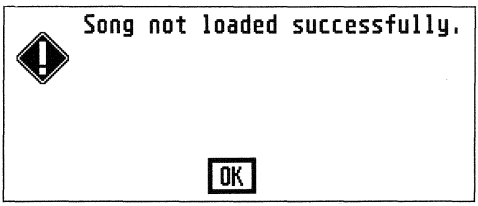
This is a troubleshooting chapter. It is a compilation of the most commonly overlooked situations which can be corrected easily.

Problem	Possible Cause	Possible Solution
• The Disk Drive has problems reading the disk.	• The disk may not be correctly seated in the disk drive. • The disk may be damaged. • There may be dust on the disk. • The spring in the disk shutter may be stiff. • The drive may not be aligned properly.	• Remove the disk from the drive and re-insert it. • Play with the disk shutter and spin the disk inside its casing manually (by rotating the metal hub) then Retry. • Try the same disk on a different drive.
• MIDI Out data seems to be doubled up or garbled when using MIDI In/Out ports.	• The Atari ST MIDI Out port uses pins 1 and 3 for MIDI Thru. Pins 4 and 5 are the two signal pins in MIDI. Some cable manufacturers cross connect pins 1 and 3 to these wires causing "MIDI feedback".	• Use MIDI spec cables. • Try another brand of MIDI cables.
• The computer crashes when an underscore (_) is typed in a dialog box.	• A GEM bug occurs in ROM versions through 11/20/85. This does not occur in TOS 1.2 or later ROMs.	• Don't type in an underscore in dialog boxes unless you understand where the underscore will work (for example, they won't work any time a number is requested).

Problem	Possible Cause	Possible Solution
• Computer crashes when a disk error occurs.	• Repeated disk errors (such as no disk in drive) can sometimes lead to system hangups. This does not occur in TOS 1.4 or later ROMs.	• After getting one error such as no disk in drive, it's safest to save the song file and reset the computer as soon as possible. • If you get an error because of no disk in the drive, insert a disk and choose Retry (don't Cancel).
• When the program is loaded, sometimes the key click chatters continuously (monitor volume turned up).	• If you move the mouse while the program is loading, it may get the computer confused.	• Hit the **Esc** key
• The metronome can't be heard even though it is enabled.	• Monitor volume down.	• Turn up your monitor volume.
• Menus fail to drop.	• GEM	• Click the Left button once while pointing at the menu bar.
• The menu sticks when I get part way down the menu and none of the functions can be selected.	• GEM	• Move the mouse back up into the menu bar and then retry.

Problem	Possible Cause	Possible Solution
• The date and time on some songs comes up blank.	• The date and time are displayed only if valid (later than 1985).	• Use the Control Panel accessory to set the correct date and time. When you turn your computer off, it loses the time unless you have a battery backed-up clock.
• Some .**SNG** files won't load.	• The song could have been created with a different program. Some other sequencers also create files with the **.SNG** extension.	• You can only load **.SNG** files created with Hybrid Arts programs.
• SysXpress Accessory is not in the Desk menu.	• The Accessory was not properly loaded.	• Any accessory you want to use must be on the disk in drive A (drive C if using hard disk) when the computer is turned on or reset. Quit out of MidiTrack ST and reboot with the BOOT disk in drive A.

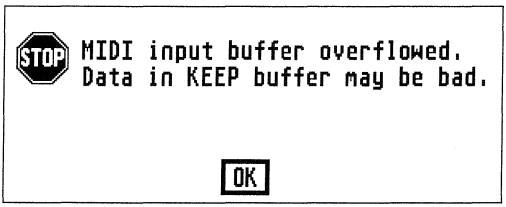




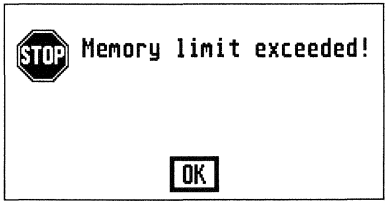
Problem	Possible Cause	Possible Solution
• Every time the song plays, my instruments change patches but I don't want them to.	• Patch changes are recorded the same way as Note Events. When the sequence gets to a patch change event, it changes the patch setting on the assigned instrument.	• Don't change patches while you are recording the music. Instead, record all music with one patch setting (you may want to filter patch changes -- MIDI Input Filters option). Then go back and record all the patch changes on a separate track. You can then turn off the patch track and the patches won't change. • Use the Event List and Display only Patch Changes. Then Delete all of them.
• Some notes don't seem to play on my MIDI instrument.	• Some MIDI Synths can only play a limited number of notes at once. These is a limit of the instrument, not the sequencer. (Observe the Track Activity Indicators to get an idea of how many notes are being played at one time.)	• If the instrument has Mono Mode (also called solo mode), this causes it to play only one voice at a time per channel. • Some instruments have different patch settings. One patch may play 8 voices at once; another may only allow you to play up to 4 notes. Be aware of these settings.

Problem	Possible Cause	Possible Solution
• The song I saved doesn't appear on my disk when I try to reload it.	• You may have named the song with an extension other than **.SNG**.	• The filename is 8 characters long. The extension consists of the 3 characters after the period. When you name your song, be sure to only use the first 8 characters. • Quit the program and rename your song with an **.SNG** extension (refer to Renaming Files in your Atari owners manual).
• When I load my song in, I don't get the most current version.	• It is possible to save different versions of the same song to different disks with the *same* filename.	• Make sure you have the correct disk in the drive. • Also make sure you are accessing the correct drive.
• A digit (or plus sign) appears to the right of the KEEP button while I'm recording or transferring from a drum machine or other sequencer via MIDI. 	• Mouse movement while recording lots of MIDI data may lead to data errors.	• Place the mouse on a surface where it won't move unless you move it intentionally. • Disable the mouse (see pg. A-10) while you're recording. • Rerecord the take if possible. • MidiPlexer users use input B.

Problem	Possible Cause	Possible Solution
• A message says that the MIDI input buffer overflowed.	• If continuous MIDI information is being received at the MIDI input, selecting a menu or dialog box may cause the MIDI memory buffer to overflow. The source of this continuous data may be Clock from a drum machine, or data from a loose joystick, wheel, or lever on your keyboard.	• If the source of the continuous data is a drum machine, disable MIDI Clock output on it. • If the source is a loose pitch wheel and you don't need to record pitch bend, filter Pitch Bend (using the MIDI Input Filters option in the MIDI menu). • If the source is a joystick, wheel, or lever other than pitch bend, and you don't need to record any continuous controllers, filter out Control Changes. • You can ignore the problem in most cases, as it usually occurs when you don't have important data in the KEEP buffer anyway.
• The KEEP button lights when you're not doing anything.	• Some sort of MIDI information has been received. The source may be data from a loose joystick, wheel, or lever on your keyboard.	• Filter out Pitch Bend and/or Control Change messages (in the MIDI Input Filters option) if you don't need to record those types of events. • The KEEP buffer will be cleared when you click on PLAY to start recording.



Problem	Possible Cause	Possible Solution
• While I'm recording or editing, a memory limit message appears.	• The KEEP buffer's capacity has been exceeded by MIDI input, or there wasn't enough unused memory to hold the temporary data needed during an edit operation.	• If you want to play on your keyboard while MidiTrack ST is not playing, click on the Counter Reset Button to reset the counter to the beginning of the song. If the counter is at 00000.00 and the KEEP buffer overflows from MIDI input, no message will be shown, and MidiTrack ST will automatically clear the KEEP buffer. • If a track edit runs out of memory, you need to either delete some unnecessary tracks, or make more memory available to MidiTrack ST (after quitting). See pg. 3-8 for a note about song memory capacity.



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Problem Report

We are constantly improving our products. Any suggestions or problems you bring to our attention would aid in assuring you receive the finest quality product possible. Please write down your ideas, fill out the following information, and mail this page to Hybrid Arts, Inc. Product Support Division, 11920 W. Olympic Blvd., Los Angeles, CA 90064.

Your Address

Name

Street

City State ZIP

Phone Date

Hybrid Arts Product Description

Name Warranty #

Version/Release

Addtional Information

Other Software

Desk Accessories

AUTO Folder Programs

Your Studio Set Up

Computer	520 ST	1040ST	MEGA-2	MEGA-4	
Monitor	Color (RGB)	Monochrome (B & W)			
RAM	512K	1 MEG	2 MEG	4 MEG	5+ MEG
Drive A	Single-Sided	Double-Sided			
Drive B	Single-Sided	Double-Sided			
Hard Drive	Yes	No	Size:	MEGA-BYTES	
Printer	Yes	No	Make/Model:		

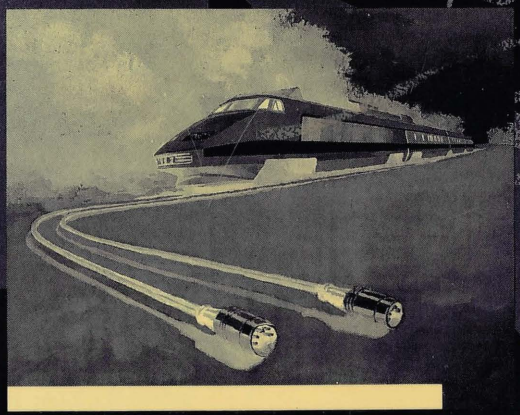
Report Form

If you can provide any addtional information (exact steps to repeat problem, Alt-Help screen dumps, etc.) it would be greatly appreciated.

Hybrid Arts Technical Department Use

Hybrid Arts, Inc.

8522 National Blvd. Culver City, CA 90232
Phone: (213) 841-0340 Fax: (213) 841-0348



SmpteTrack™ II

Hybrid Arts, Inc.™